Journal of THE AMERICAN DIETETIC ASSOCIATION

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June 1952

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W. L. Mallmann

NUTRITIONAL ACCOUNTING FOR INSTITUTIONS
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DIETITIAN-PATIENT RELATIONSHIPS
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COMPARISON OF ORANGE JUICES
Virginia R. Charles and Frances O. Van Duyne

Food Aspects of Civil Defense

35th A.D.A. Annual Meeting, Minneapolis, October 21-24, 1952

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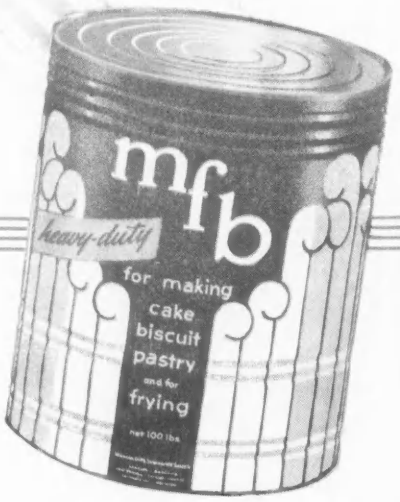

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Factors Involved in Cleaning and Sanitizing[1]

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ANY discussion of cleaning and sanitizing must be prefaced by commenting on personnel. Management frequently fails to educate the worker to the importance of cleanliness and the part his job plays in producing a quality product.

Management generally lays out a routine and provides some cleaning products without explaining to the worker the objective or the function of the chemical detergents and sanitizers. As a result, the worker approaches his task as a job to be done without interest other than the expected pay check. If he had some concept of the importance of soil removal and the destruction of contaminating microorganisms, the task would become interesting and important. Personnel training is far more important than the kind of detergent employed, because any detergent will work if it is properly used.

It is well to remember that a cleaning procedure, whether it is a hand or machine operation, is no better than the operator. No matter how good the cleaning agent is, its usefulness will depend entirely on how the worker uses it. The concentration, the time of application, the amount of preparation, and the cleanliness of the wash solution collectively spell the degree of cleaning attained. The quality of the resulting product, whether it be floors or dishes, is determined by the worker.

The chemical detergent serves as a supplement to increase the detergency of water. Water alone has some detergent value and removes to some extent the food soil from dishes. If fats are present, a thin film of grease will remain on the surfaces, because water alone cannot emulsify or saponify fats.

That water alone does an excellent job of dishwashing in soft water areas is well known, because many dishwashing machines, fed manually with detergent, operate most of the time without it. When a cup of detergent is added every half hour or so to the wash water in a machine, only a few of the many trays of dishes are washed in a proper detergent concentration. The infrequent applications of detergent really have only one function —the machine itself is washed periodically. The writer has often made the statement that 95 per cent of machine-washed dishes in our food establishments are washed without the aid of detergents. At the present time, this is probably an overstatement, because management in our leading food establishments has found that where proper detergent feeding apparatus has been installed, better appearing dishes result. The electronic dispenser has made possible the washing of dishes by machine with an optimal amount of detergent.

VALUE OF PRE-RINSE

If water is applied at a high velocity as, for example, in the spray-type washing machine, gross soil is rapidly removed. It is a common and very wise practice to flush food soils from dishes by passing them through jets of water prior to placing them in the dishwashing machine. Some of the machine manufacturers are now building into their machines a pre-wash tank for this purpose.

If the wash water is kept free of food soil, better washing results. When all dishwashing operations include a pre-wash so that gross food soils are kept out of the wash tanks, the wash arms can be redesigned so that jets of water impinge on the dish surface cutting the residual soil away, thus eliminating the wide slots in the wash arms which throw large volumes of water over the dishes at low velocities with little soil-cutting action. When gross soil enters the wash water, large slots for passage of water must be used; otherwise the water orifices would be clogged and no washing would result.

The present-day dishwashing machine is a compromise device designed to wash as well as possible the flat pieces, bowls, cups, glass, and silverware. Water velocity must be set so that it won't disturb the dishes in the trays rather than at a velocity to give maximum cleaning action for each item to be washed. For this reason, the machine has limited cleaning capacity, and provisions must be made in the preparation of the dishes prior to washing to remove excess soil and wet the remaining soil so that good cleaning can be attained.

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 11, 1951.

It is interesting to note that if egg soil is allowed to dry on a plate and the plate is placed in a conveyor type machine without pre-soaking, the egg soil will not necessarily be completely removed.

Wash and rinse water should be low in bacterial content to minimize the number of bacteria on the washed surfaces. In a study of dishwashing, the wash water was loaded with viable spores of *Bacillus subtilis*. Clean plates were washed in the bacteria-laden water followed by rinsing in bacteria-free water. When the wash water carried a spore content of 320,000, the washed plates had an average swab count of 4000 and the rinsed plates, an average of 1200. Even the presence of the proper concentration of a good detergent in the wash water failed to reduce materially the bacterial population of the rinsed dish.

Because bacteria-laden water may introduce bacteria onto a surface rather than reduce their number, the use of clean wash water is essential. Wash water, if not changed frequently, may defeat the purpose of washing, particularly if a chemical sanitizer is not applied after proper washing to destroy the residual bacteria left on the surface.

The pre-washing of dishes prolongs the useful life of wash water by minimizing the number of bacteria introduced into it from the soiled dishes.

NEED FOR CLEAN EQUIPMENT

The presence of soil in the wash water or on the surfaces of the container frequently defeats the value of the cleaning process. To determine the effect of some of the possible interferences, a series of studies was made by Mallmann and Harley (1). First a study was made of an acceptable quaternary compound under unfavorable and insanitary conditions. Glasses were washed and sanitized in a three-tank system. The tanks and brushes were visibly dirty. The tanks were filled with clean water, but no attempt was made to clean either the brushes or the surfaces of the tanks. In the first tank was placed a detergent-sanitizer containing a quaternary compound in a dosage of 50 p.p.m. The water in the second tank served as a fresh water rinse, and the third tank received 200 p.p.m. of the sanitizer alone. The washing and rinsing were done by a laboratory technician. Every tenth glass was examined bacteriologically to determine sanitary quality.

Even though a quaternary sanitizer was present in the wash water, there were still 144,000 bacteria per milliliter in the water at the start of the experiment. The sanitizer had been inactivated by the soil on the tank and in the water before the wash experiment began. This count increased during the wash period until, after four hundred glasses had been washed, it reached 102,000,000 bacteria per milliliter. The count in the rinse tank increased as bacteria were carried over from the wash tank until it reached 1,360,000 bacteria per milliliter. The rinsed glasses had counts in excess of 3000 bacteria and even after passing through the sanitizing bath, the residual bacteria still ranged from 10 to 2140 per glass.

In a second experiment where the same equipment was properly cleaned and sanitized, the wash, rinse, and sanitizing waters had a zero count throughout the tests. The sanitized glasses had zero counts for the entire run.

These data show the need for proper cleaning of the dishwashing machine, wash tanks, and rinse tanks and the need for clean water in order to attain a surface that not only appears clean to sight and touch, but is also reasonably low in bacterial content. Inasmuch as the primary objective in cleaning is the removal of microbial contamination, the microbial content of wash water is important.

TEMPERATURE OF WASH WATER

It has been generally accepted that maximum soil removal occurs at temperatures from 130° to 140°F. Lower temperatures have been considered unsatisfactory due to the high melting point of some fats, and temperatures above 140°F. have been considered unsatisfactory because the heat was believed to cook albuminous matter and cause adherence of food soil to the surfaces of utensils.

In a study of high-temperature washing, it was found by the writer and his associates (2) that where washing was done effectively by sprays or jets, water with temperatures in excess of 140°F. was more effective. The scrubbing action of the jets of water cut the soil from the surfaces before coagulation of albuminous matter occurred. An increase in the temperature of the water increased detergency. Incidentally, detergents possess increased detergent values in waters with temperatures above 140°F. An 0.1 per cent detergent concentration in water at 160°F. has much greater detergency than the same concentration at 140°F.

Furthermore, if the water in the wash tank is maintained at temperatures of 160°F., most bacteria are killed so that the wash water also acts as a sanitizing bath, thus supplementing the sanitizing hot water rinse and making doubly sure that safe, sanitary dishes are produced.

CONCENTRATION OF DETERGENT

Many of the failures to obtain sanitary quality in food utensils can be laid, not to the selection of detergents and sanitizers, but to the methods used in their application and carelessness in performance. Most of the reasons for criticisms of a sanitizer or a detergent are not due to the failure of the compound to perform but to improper application. In one of our cafeterias on campus, the best detergents were tried; still deposition of film occurred on the dishes. The fault was likely due to improper dosage and

insufficient fresh water introduced into the wash water to dilute the excess suspended soil.

The need of careful and complete cleaning is essential prior to sanitization by such chemical agents as hypochlorites or quaternary ammonium compounds. Sanitizing agents do not have the property of penetration. Such agents as hypochlorites and quaternary ammonium compounds are no exception. The lack of this property is demonstrated by the fact that when organisms are embedded in a dried milk film they are not killed; whereas, the same organisms when suspended in a liquid are easily killed by the same dilution. Mallmann and Leavitt (3) demonstrated that complete kill was obtained by a quaternary ammonium compound using the phenol coefficient method of measuring bacterial kill at a concentration of 1 in 60,000, whereas using the use-dilution technique, a 1 in 10,000 dilution was necessary to effect complete kill in the same exposure time. In the second method, a film of organisms deposited on a glass surface was used. Because the disinfectant lacks penetrability, the concentration of the disinfectant had to be excessive.

Not only is it important to maintain a detergent concentration at a constant level, but the dosage rate is important. An 0.1 per cent solution in a given water may effect cleaning of one or more units, but when large numbers of utensils are washed in the same water, redeposition of soil may occur when the soil-suspending power of the detergent has been passed. Under the same conditions, if a dosage of 0.3 per cent is maintained, perfect cleaning will occur throughout the entire run.

When a detergent fails to produce dishes free of deposition, try increasing the dosage before blaming the detergent. The detergent may be perfectly satisfactory, but the dosage is too low to suspend the soil in the wash water.

The dosage of a detergent for a given job will vary with the type of water, the ingredient content of the detergent, and the amount of suspended solids carried in the wash water before it is totally replaced. Ordinarily dosage will range from 0.1 to 0.3 per cent. The proper dosage of a detergent must be determined for each job and each machine and in keeping with the preparation of the dish prior to washing.

The types of water affect the alkaline detergents to the greatest extent. Hardness of the water is of prime importance. Even in soft waters, polyphosphates are necessary to sequester water hardness to prevent a gradual increase of waterstone on the dishes. In such cleaners, where the amount of the sequestering agent is approximately 10 per cent, 90 per cent of the cleaner is active detergent. In hard waters (200 to 300 p.p.m. hardness), detergents consisting of 40 per cent sequestering agents with only 60 per cent active detergent may be needed. It will be necessary to use a higher percentage of detergent in the latter because of the lower percentage of active detergent in the preparation. The use of zeolite water softeners in hard water areas is not only economical but will result in much better appearing dishes.

There are no universal alkaline detergents that can be used economically and efficiently throughout the country unless the water is previously conditioned by use of water softeners, iron removal units, or other conditioning devices necessary for the water in question.

For hand-washing operations, the alkali detergents have been replaced largely by the slightly alkaline synthetic soap compounds. In these compounds, anionic and non-ionic surface-active agents are the detergent elements in the cleaning preparation. Polyphosphates are added to eliminate water hardness, although the synthetic agents are largely unaffected by calcium and magnesium water hardness. These compounds are not only excellent detergents, but because they are unaffected by hardness they work well in most waters. The many widely advertised synthetic detergents used in the home are good examples of this type of product.

EQUIPMENT DESIGN AND MAINTENANCE

Modern detergents are doing an excellent job when properly used; however, there will undoubtedly be marked improvements.

There is still need for further development of equipment using detergents. For example, again referring to dishwashing, we have demonstrated that in a machine that failed to remove our standard soil in the absence of a detergent, a 45 per cent removal was obtained in the presence of a detergent. Another machine of the same type but of another manufacturer removed 91 per cent without a detergent and 99 per cent with a detergent. These data show the importance of good equipment.

These data also show the marked differences that exist in dishwashing machines now on the market. The fact that two machines in the same price class and designed for the same washing load vary from no standard soil removal to 91 per cent removal in the absence of a detergent means there is a definite need for improved designs of dishwashing machines on the part of some manufacturers.

There is also a definite need for frequent inspection of dishwashing machines to determine whether they are functioning properly. Sometimes corrosive water, corrosive detergents, or a combination of both may cause corrosion of pump impellers so that water flow rates are materially decreased; sometimes the slots in the wash arms are enlarged by corrosion so that the velocity of sprays is decreased. Occasionally slots in wash and rinse arms are plugged so that uneven sprays result. A machine in disrepair will not wash dishes properly.

TIME ELEMENT

For effective cleaning, it is necessary to allow sufficient time for the soil to be wet thoroughly by the detergent solution, followed by friction washing to remove and suspend soil so that it can be removed by flushing. Friction can be induced by striking soiled surfaces with a high velocity jet of detergent solution.

In all cases the period of treatment must be of sufficient duration to remove all soil. For example, in a study where a high velocity jet struck a moving soiled target, the soil was removed in 8 seconds; where the target was stationary and only part of the soiled surface was hit by the jet of detergent solution, the time was 30 to 40 seconds for complete cleaning; and where the target was splashed by the same detergent solution the time was 5 min.

SUMMARY

For good dishwashing by machine, dishes should be scraped by hand or water; the wash water should be maintained at a temperature of at least 140°F.; it should be kept reasonably clean by adding fresh water and changing when necessary; a good detergent should be kept in the wash water at an optimum concentration for good cleaning; the machine should be clean and maintained for maximum efficiency; and the dishes should be rinsed with water at a temperature of 170°F. at the dish surface (180°F. in line) for a maximum of 10 seconds with a water flow during that period of 0.375 gal. per 100 sq. in. tray surface. Under these conditions, clean, health-hazard-free dishes will be obtained.

The present-day alkaline and synthetic detergents are satisfactory cleaners when they are properly used. Most unsatisfactory results are due to faults in the use of the cleaner.

High-temperature washing in general is more satisfactory than low-temperature, provided friction by jet washing is used.

If surfaces are washed with a detergent solution containing high bacterial populations, the rinsed surface will carry proportionately high bacterial populations unless the rinsing is done with lethal water.

For proper application of chemical sanitizers, the surfaces must be free of soil because the sanitizers do not have the property of penetration.

Detergent solutions must be maintained with a minimum of suspended matter; otherwise soil is redeposited on the washed surfaces. The suspending capacity of a detergent solution is roughly proportional to the concentration of detergent.

The type and amount of detergent used must be selected in accordance with the composition of the water. Hard waters or water of unusual mineral composition should be conditioned before use in a dishwashing machine.

In order to obtain best results from a detergent, it is necessary that cleaning equipment be designed to give maximum mechanical cleaning action.

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Training Table Diets

The Trainer's Bible, by Dr. S. E. Billik (New York: T. H. Reed and Company, 1946), is one of the few books on athletic training prepared by a medical writer. It contains a chapter on "Diet in Athletics."

In general the best diet for the athlete is the same good diet as that recommended for any person of like age with a similar work output. There is a dearth of scientific information relative to the kind of meal most desirable immediately preceding an athletic event. Available evidence appears to indicate that severe exercise in itself has little effect on digestion but that the strong emotions connected with competition in even the milder types of sports may upset digestion and impede high-level performance. Consequently coaches prefer that their athletes eat two to three hours prior to game time, the meal consisting of easily digested foods that at the same time will furnish the energy necessary for strenuous physical activity. A typical pregame menu might include lean meat or eggs, baked potato or toast, milk, tea, coffee, or cocoa, and fully ripe fresh fruits. Since the passage of food through the gastrointestinal tract generally takes more than 24 hours, it is considered desirable to omit foods containing large amounts of roughage, such as fibrous vegetables, from the diet during this period. Individual preference for and reaction to various types of foods are most important, and the foods one is accustomed to must be taken into account. As a general rule the high-strung, sensitive type of athlete will be happiest with a lighter meal eaten longer in advance of a contest than will his less emotional teammate. There is, as far as known, no reason to recommend differentiation of these principles for land and aquatic sports.—*From Queries and Minor Notes, J.A.M.A., 147: 1398 (December 1), 1951.*

Nutritional Accounting in Planning Food for Institutions[1]

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GOOD meals in institutions don't "just happen." They are the result of good management throughout the various stages in the planning, preparation, and serving of food. It would be difficult to say which stage is the most important because poor management at any point will affect the quality of the final meals. Although the job of serving good food is not easy, it should be challenging.

Planning food is a very important stage in a very important job. It is here that the foundation is laid for the entire food service. Planning food to provide the right kind, quality, and quantity is a start on the road to good meals—the ultimate goal of food service.

The food planner has many factors to consider. Foremost among these is that the food must provide meals for individuals who may differ greatly in their nutritional needs and food likes. The food must be of the type that can be prepared with the staff and equipment available, and, usually, the quantity or cost must be kept within definite limits. Because of the complexity and the importance of the job, the food manager needs basic information to guide her. For good planning, records of past and current food use are invaluable aids when properly maintained, evaluated, and translated into constructive action.

Any institution which supplies food has a responsibility for providing for the nutritional needs of every resident. The manager, therefore, should be well informed concerning the needs of the different types of residents. Yet many, in their effort to keep within the ration allowance, lose sight of this fact and concern themselves chiefly with keeping within the cost budget. Even administrators frequently judge success entirely by the skill with which a manager keeps within the cost limits. This trend has been accentuated in recent years because of the tightening pressure on budgets, for all too often an institution's ration allowance has not been increased to keep pace with rising prices. Of course, cost is important, but it should not mask the real purpose—to supply adequate meals.

Undoubtedly the adequacy of the food served could be judged in time through periodic examinations of the nutritional health of each resident. This is a time-consuming and expensive undertaking, which precludes its use in most institutions. Fortunately, there are other less time-consuming and less expensive techniques which can be effectively used. Because these techniques indicate nutritive adequacy of food at a point somewhat removed from the individual, they are not as accurate. Yet this should not rule out their use. It would appear unwise to eliminate a technique that can furnish a continuing basis for evaluating the adequacy of food because it is not as accurate as one which, at best, can only be employed infrequently. Instead, it emphasizes a need for the intelligent use of the information provided.

NUTRITIONAL ACCOUNTING

A procedure that will furnish this kind of information on the adequacy of food is sometimes called "nutritional accounting." In nutritional accounting, the nutritive value of the quantities of food (grouped according to similarity in nutritive content and use in meals) that are issued per ration, per day, is computed by using average food values per pound for the respective groups. A comparison of the quantities of major nutrients obtained in this manner with the quantities needed by the residents, based on the National Research Council's Recommended Dietary Allowances (1), will provide a basis for appraising the diet.

Nutritional accounting can be carried out using records that normally are maintained in every well managed institution, large or small. It can become a routine procedure with the computations made by clerical personnel as a part of the monthly accounting procedure. When carried on regularly, information on the trends in the quality of the diets useful in planning adequate food quantities, or for improving

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current practices, can be obtained at any time. This information will be valuable to both food managers and administrators who need evidence that food money is wisely spent.

ESTIMATING NUTRITIONAL NEEDS

To describe nutritional accounting, it is necessary to discuss in more detail the basic data needed. To begin with, if the food planned is to be adequate, an estimate of the nutritional requirements of the residents is needed. This estimate can be obtained by using the National Research Council's Recommended Dietary Allowances for the different age and activity groups, along with the number of residents who fall into each category. In Table 1 is illustrated the procedure for estimating the food energy, protein, calcium, iron, and vitamins needed.

Under "residents" is listed the number of persons who fall into each age and activity group. The number in each group is then multiplied by the Recommended Dietary Allowance for that respective group. Each column of "quantity needed" is added and the total divided by the total number of residents, 105 in the example given. This provides an estimate of the average quantities of the major nutrients needed per person per day in a particular institution, assuming that food is equitably distributed according to need.

CALCULATING FOOD IN TERMS OF NEEDS

After the average nutritional needs of the residents have been determined, the next question to arise is: Does the food provide adequately for these needs?

Using nutritional accounting to judge the adequacy of the diet, it is necessary to know the quantity of food issued per person, per day. Records of food issues are available in most institutions, and, of course, should be available in all.

The nutritive value of the quantities of food issued can be computed by using values for the individual foods. However, this is time-consuming and can be simplified by grouping foods according to similarity in nutritive value and use in meals. The number of groups may vary, but each group should include a fairly homogeneous list of foods. Institutions operating on a quantity ration may want to use the groups in their official ration as is done by the Armed Forces, Veterans Administration, and the Federal Bureau of Prisons. For illustrative purposes, the food groups used by the Bureau of Human Nutrition and Home Economics are shown in the following tables.

In Table 2 is illustrated a simple form which can be used to record issues of leafy, green, and yellow vegetables. Similar forms would be used for each of the other food groups. To insure accuracy, it is advisable to provide clerical personnel with a list of the foods included in each group.

Without complicating the task unduly, more information that is extremely useful is obtained if foods within each group are recorded according to the form in which they are issued, i.e., fresh, canned, and frozen. A record form similar to one shown in

TABLE 1

Estimates of quantities of major nutrients needed in one day by residents (based on National Research Council's Recommended Dietary Allowances [1])

AGE AND ACTIVITY GROUP	Residents*	FOOD ENERGY		PROTEIN		CALCIUM		IRON		VITAMIN A VALUE		THIAMINE		RIBOFLAVIN		NIACIN		ASCORBIC ACID	
		Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed	Recommended allowance	Quantity needed
		calories	*calories*	*gm.*	.	*gm.*	*gm.*	*mg.*	*mg.*	*I.U.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*
Children through 12 years																			
4–6 years	10	1600	16,000	50	500	1.0	10.0	8	80	2500	25,000	0.8	8.0	1.2	12.0	8	80	50	500
7–9 years	20	2000	40,000	60	1200	1.0	20.0	10	200	3500	70,000	1.0	20.0	1.5	30.0	10	200	60	1200
10–12 years	25	2500	62,500	70	1750	1.2	30.0	12	300	4500	112,500	1.2	30.0	1.8	45.0	12	300	75	1875
Girls																			
13–15 years	30	2600	78,000	80	2400	1.3	39.0	15	450	5000	150,000	1.3	39.0	2.0	60.0	13	390	80	2400
16–20 years	5	2400	12,000	75	375	1.0	5.0	15	75	5000	25,000	1.2	6.0	1.8	9.0	12	60	80	400
Women																			
Moderately active	7	2400	16,800	60	420	1.0	7.0	12	84	5000	35,000	1.2	8.4	1.5	10.5	12	84	70	490
Very active	3	3000	9,000	60	180	1.0	3.0	12	36	5000	15,000	1.5	4.5	1.5	4.5	15	45	70	210
Men																			
Physically active	3	3000	9,000	70	210	1.0	3.0	12	36	5000	15,000	1.5	4.5	1.8	5.4	15	45	75	225
With heavy work	2	4500	9,000	70	140	1.0	2.0	12	24	5000	10,000	1.8	3.6	1.8	3.6	18	36	75	150
Total	105		252,300		7175		119.0		1285		457,500		124.0		180.0		1240		7450
Average per person, per day (total ÷ 105)	1		2,403		68		1.1		12		4,357		1.2		1.7		12		70

* Number of residents in the different age and activity groups.

Table 2 would be used for each of these categories. In other respects the procedure would be the same as illustrated.

Data such as these help in planning future needs, in showing seasonal differences in the use of food, and in evaluating expenditures more precisely.

In many institutions issues are recorded on cards set up for individual foods. These records usually require more bookkeeping, but can be used as well as those illustrated.

To compute the quantity of food issued per person, per day, the quantities of individual foods issued during the period for which the nutritional accounting is being done are added by groups. Those totals, divided by the number of rations fed during the same period, will give the average quantity of each food group issued per person, per day.

COMPUTING NUTRITIVE VALUE

The next step in nutritional accounting is the computation of the nutritive value of the food group quantities. Nutritive values per pound for each food group are needed for this procedure.

Group nutritive values per pound are average values based on a definite relationship among individual foods within a group. For example, in leafy, green, and yellow vegetables, the relationship may be 10 lb. fresh green beans, 12 lb. fresh carrots, 30 lb. cabbage, 5 lb. canned peas, 3 lb. canned green beans, and so on.

These quantities of individual foods should be based on actual records of food usage such as shown by dietary studies, per capita food supply estimates, or records of an institution's own use of food.

To develop group values, the quantity of each food within the group is multiplied by its respective nutritive value. The total quantity of each nutrient divided by the total pounds of food in the group provides the average quantity of the nutrients per pound of food group.

There are several tables of per pound values available, such as those by Leichsenring and Wilson (3), Berryman and Chatfield (4), Berryman and Howe (5), and the Bureau of Human Nutrition and Home Economics (6) which is used in Table 3.

Using the group values in Table 3, the procedure is similar to that shown for estimating the nutrient needs of the residents (Table 1). The quantity of each food group issued per person per day is multiplied by the nutritive value given for the respective group. For example, if 0.38 lb. leafy, green, and yellow vegetables per person per day has been issued, this would be multiplied by: 115 (the number of calories per pound for leafy, green, and yellow vegetables) to obtain the number of calories available from the quantity issued; by 7 to obtain the number of grams of protein available; and so on. After this is completed for all the major nutrients, each column is added. These totals will represent the nutritive value available per person per day from the food issued after some allowance has been made for preparation waste. (The waste allowed in Table 3 equals the "refuse" given in Table 2 of *Composition of Foods—Raw, Processed, Prepared* [7].)

To simplify this procedure for clerical personnel, a work sheet similar to that shown in Table 1 can be developed.

A comparison of these nutrients with the average quantity needed per person, per day, based on the recommended allowances, furnishes a basis for evaluating the adequacy of the food issued. The quantity of each nutrient obtained in an analysis of this kind should be greater than the allowances, especially for those that are likely to be affected by waste. If, however, the estimates are considerably above or below the recommended allowances, the reason should be carefully checked.

TABLE 2

Suggested form for recording quantity and cost of leafy, green, and yellow vegetables

DATE	FOOD ISSUED	QUANTITY			COST	
		Unit size	Number of units	Total weight* of units issued	Unit	Total
				lb.		
10/20/50	String beans	#10 can	5	31.55	$0.85	$4.25
10/21/50	Cabbage	bu.	¾	24.00	1.75	1.31
10/21/50	Carrots (topped)	bu.	¼	12.50	2.75	0.69
10/25/50	Frozen green peas	2½ # pkg.	8	20.00	0.65	5.20

Number of rations fed_____ Total pounds_____ Total $_____

Pounds per ration, per day_____ Cost per ration, per day_____

* Approximate weight of "units" of individual foods are published in "Food Purchasing Guide for Group Feeding" (2)

TABLE 3

*Nutritive value per pound of food groups**

FOOD GROUP	FOOD ENERGY	PROTEIN	FAT	CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
	calories	*gm.*	*gm.*	*gm.*	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
Leafy, green, and yellow vegetables†	115	7	0.9	24.1	0.17	3.6	9900	0.15	0.19	1.3	54
Citrus fruit, tomatoes†	150	4	1.1	35.9	0.07	1.8	2100	0.23	0.12	1.7	129
Potatoes, sweet potatoes†	335	8	0.6	76.8	0.05	2.7	3500	0.30	0.13	3.4	43
Other vegetables and fruits†	205	4	1.3	49.9	0.07	2.0	1300	0.12	0.13	1.3	26
Milk equivalent†	300	16	17.1	20.9	0.53	0.4	700	0.14	0.75	0.5	5
Meat, poultry, fish†	935	65	73.1	0.5	0.06	9.7	1400	0.75	0.82	16.8	4
Eggs	655	52	46.5	2.8	0.22	10.9	4600	0.33	1.11	0.3	0
Dry beans and peas, nuts†	2005	102	99.4	202.9	0.56	23.0	100	2.40	0.89	28.4	5
Flour, cereals, baked goods (flour equivalent)											
In institutions purchasing most of baked goods‡	1975	56	22.7	386.9	0.39	12.2	100	1.35	1.10	12.2	Trace
In institutions producing most of baked goods†	1655	47	5.7	346.5	0.08	9.3	100	1.18	0.72	9.8	0
Fats, oils											
In institutions purchasing most of baked goods‡	3340	10	363.3	7.5	0.04	1.5	5600	0.19	0.13	2.0	0
In institutions producing most of baked goods†	3565	11	392.5	1.4	0.03	1.0	3700	0.19	0.13	2.2	0
Sugars, sirups, preserves‡	1750	4	1.1	412.1	0.04	2.1	0	0.01	0.03	0.2	5

* Values based on *Composition of Foods—Raw, Processed, Prepared*, U. S. D. A. Agriculture Handbook No. 8 (7), except for those groups with a double dagger, which are based on *Tables of Food Composition in Terms of Eleven Nutrients* (8). Some allowance has been made for the loss of nutrients during cooking.

† Selection and quantities of individual foods within these groups are based on estimates of the United States Per Capita Food Supply for 1948 made by the Bureau of Agricultural Economics, U. S. Department of Agriculture.

‡ Selection and quantity of individual foods in these groups are based on patterns of use presented in Nutritive Value of Diets of Urban Families, U. S. Spring 1948 (9).

Nutrients based on food issues could closely approximate the allowances if it could be assured that food were distributed among residents according to need and that all food issued were consumed (over and above normal preparation loss). However, there is no such assurance, and usually there is some waste in addition to preparation waste. A manager should have an appreciation of the magnitude of waste; if small, it can be disregarded. If sizable, the effect on the nutritional evaluation must be estimated and steps should be taken to cut down the excessive waste.

These possibilities indicate that nutritional accounting provides a rough appraisal of adequacy. It is valuable, nevertheless, especially when continued over a period of time as shown in Table 4. From this table it is apparent that the amounts of the same nutrients were not consistent for the different periods. There will always be some variation, but, for example, the difference should not be as great as shown for protein. Except for the last week in February, vitamin A value was consistently low. A scrutiny of the quantities of the various food groups issued for these periods should provide an explanation for the variations and inadequacies.

The high quantities of all nutrients given for the fourth week in February would indicate a need to investigate such factors as poor record keeping, inaccuracy in computations, pilferage, excessive waste, or issue of too much food.

OTHER USES FOR FIGURES

The foregoing illustrates the use of nutritional accounting in evaluating the adequacy of the diet. These same basic records have many other uses. The quantities of food groups issued per person, per day can be used to:

(a) Show how well the official quantity ration has been followed.

(b) Show seasonal differences in the use of food, if records are kept regularly. (If food group quantities are recorded on graph paper, changes will be more easily identified.)

(c) Indicate reasons for changes in the cost of the diet over a period of time.

(d) Show average quantities of food issued at regular periods during the year. This is valuable as a basis for planning purchases and production needs and for making budget estimates.

When the cost of each food group is recorded, still more descriptive information is available. For example, the cost of food groups can be used to:

(a) Indicate the food groups most responsible for changes in the total cost of the diet.

(b) Serve as a basis for computing the proportion of total cost that is spent for each group.

TABLE 4

Nutritive value of food issued per ration, per day

DATE	FOOD ENERGY	PROTEIN	FAT	CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
	calories	*gm.*	*gm.*	*gm.*	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
January											
1st week	2800	100	90	380	1.03	18.7	3,337	2.5	2.6	17.0	85
2nd week	2550	68	87	370	0.83	15.3	2,950	1.7	1.8	16.2	100
3rd week	2506	95	98	306	1.34	14.6	4,000	1.4	2.3	17.0	40
4th week	2735	102	113	330	1.08	22.1	1,982	2.0	2.1	19.5	29
February											
1st week	3065	90	105	430	1.07	20.0	4,575	2.0	2.0	18.4	121
2nd week	2782	84	108	369	0.95	16.7	4,320	1.9	2.2	15.5	77
3rd week	2172	70	76	305	1.05	14.6	3,474	1.4	1.7	11.1	45
4th week	4150	125	185	496	1.43	27.2	17,000	3.2	3.8	27.2	200
Recommended Dietary Allowance*	2403	68			1.10	12.0	4,357	1.2	1.7	12.0	70

* Weighted to institution population.

(c) Show seasonal variations.

(d) Indicate the magnitude of changes in total food cost due to changes in the general price level of food.

These illustrate the types of information that can be obtained from the same basic records. Other useful facts that can be derived will become apparent to the food manager as records are continued and analyzed to meet local problems.

RECORD-KEEPING PERSONNEL

Undoubtedly, more large than small institutions are likely to maintain detailed records of food issues. In small institutions, the lack of clerical personnel is often given as the reason for not keeping records of this type and, of course, the food manager is too busy to take on still another job. However, in checking at several small institutions of fifty to one hundred residents, it was found that there usually is one bookkeeper. Actually, this is all the clerical help that many larger institutions employ to do the same work. The real difficulty, instead, may be that the manager lacks an understanding of the mechanics and the value of tools needed for nutritional accounting and quantity and cost appraisals. Or she may not know how to interpret and utilize records that are available.

These are real problems. Fortunately, state nutritionists now are providing some help to these institutions.

What specifically can be suggested to help the food managers in small institutions?

To start with, when the manager is inexperienced or relatively untrained, the simplest record forms should be used and only one type of record started at a time. After this one has become routine and its use well understood, another can be undertaken, with the total number of records kept at a minimum.

Quantity and cost records can be similar to those illustrated. Nutritional accounting may have to be done in a different manner from that which is illustrated. A comparison of the quantities of food groups issued per ration per day, with quantities in food plans which do provide a nutritionally adequate diet at a given cost level, such as suggested in *Planning Food for Institutions* (6) may be helpful. Such a comparison will determine the direction that changes in current food usage should take to insure good diets at a particular cost level. For example, it may indicate that a larger quantity of dairy products or leafy, green, and yellow vegetables or citrus fruit is needed—or a better assortment of foods.

Use of this technique may stimulate an interest in the manager to know the "why." In the meantime, a better diet will result.

In summary, institutions should appraise diets regularly for nutritive adequacy. This can be done through a system of nutritional accounting which uses records of the quantity of food issued. These records normally are a part of the regular accounting system. Although not as accurate a measure as examinations of the nutritional health of each resident, it is less expensive and time-consuming and, therefore, more practical in most institutions. If nutritional accounting is carried on regularly, changes in the nutritive value of the diet will be apparent. This information on the adequacy of the food used with other data on quantity and cost furnishes the food manager with a basis for planning better diets. However, regardless of how good records are, or how many analyses are made, the information must be translated into constructive action, or nothing has been gained.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Frederick Gowland Hopkins—June 20, 1861–May 16, 1947

No one person discovered the vitamins. Their discovery was the culmination of the work of many investigators in medicine and chemistry, but there was one man who was able to give direction to the scientific thinking of the day and thus lead to the identification of the vitamins. He was Frederick Gowland Hopkins who, in 1906, suggested that unidentified accessory food factors were related to the deficiency diseases of scurvy and rickets. In 1912 he published experiments showing that young rats on a synthetic diet failed to grow even though consuming adequate calories, but the same diet supplemented with a small amount of milk produced normal growth. It was for his contributions along these lines and the stimulation that he gave a research on the vitamins that Hopkins won the Nobel Prize which he shared with Eijkman in 1929.

Hopkins was the first of the British biochemists. He went to Cambridge in 1898 to develop teaching and research in chemical physiology, a new field. There he spent the rest of his life and established one of the great research centers for nutrition and biochemistry.

Among other outstanding contributions by Hopkins are: the isolation and identification of the essential amino acid tryptophane (with S. W. Cole in 1901); the earliest work on essential amino acids (with Edith G. Willcock, 1906), showing that zein of corn must be supplemented with tryptophane for growth; and the discovery and isolation of glutathione (1912). Hopkins not only was a brilliant chemist and an able research worker but was able to stimulate and guide others. Also he had that peculiar ability to envisage the whole world of biochemistry and to unify, correlate, and interpret the knowledge of his time.

"Hoppy," as he was affectionately known among biochemists, had extraordinary personal charm and kindliness for all; the humblest worker in the laboratory was always welcome to talk over his problems, and all were always sure of his moral support.

He was born in Eastbourne, June 20, 1861, and attended private schools. At seventeen, after a few months as an insurance clerk, he began work in a commercial laboratory for analytical chemistry. His interest was aroused, and he attended University lectures to qualify as a chemist. An appointment as laboratory assistant to the medical jurist of Guy's Hospital of London led to an interest in medicine, and by hard work and an exceptional ability to cram for examinations, he obtained the medical degree. Then he went to Cambridge, where his excellent knowledge of analytical chemistry and his keen mind led to the discoveries for which he is justly famous.

Many well-deserved honors, including a knighthood, were conferred on Hopkins. On his seventy-fifth birthday, his former pupils presented him with a volume of essays, *Perspectives in Biochemistry*. Despite ill health, his mental power and curiosity remained to the last. He died May 16, 1947. "One never came across anybody at all like him," wrote one of his colleagues.

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—Contributed by E. Neige Todhunter, Ph.D., Head, Department of Foods and Nutrition, University of Alabama, Tuscaloosa.

Dietitian and Patient: Evaluation of an Interpersonal Relationship[1]

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THOUGH it is probably familiar to all of you, I would like to quote the opening statement of the constitution and by-laws of The American Dietetic Association: "The American Dietetic Association was founded in 1917 by a group of dietitians who anticipated an increasing need for persons educated in the science of nutrition and versed in the art of feeding people." May I call your attention to this two-fold characterization of the functions of the Association, and accordingly of the profession of dietetics—the *science* of nutrition and the *art* of feeding people. The science refers to the vast body of fact and theory, the knowledge that you bring to bear in doing your work. The art refers to the application of that scientific knowledge to what you actually do in dealing with a patient.

There is little that I need or can say about the first function—the science of nutrition. It is with the second of these aspects of the profession of dietetics—the art of feeding people—with which this paper will be concerned.

To understand the problems in the art of feeding we must review, however briefly, some fairly obvious facts—facts which, nevertheless, must be kept constantly in the forefront of our minds if we are to use to the best advantage the basic skills which the discipline of psychology has made available to us.

TWO TYPES OF PROFESSIONS

The first thing I should like to point out is the particular role of the dietitian as a professional person. Roughly we may think of professions as divided into two categories: professions which deal with things and ideas and those which deal with people. Included in the former category would be such professional groups as engineers, physicists, chemists, and accountants. Lest I bring down upon myself the wrath of some of the members of these groups, let me hasten to clarify a point. I recognize that there is always a danger in oversimplification. I do not mean to imply that the members of these professions have no dealings with people. Rather, I mean that generally in these professions the relationship with people is secondary.

In contrast to this category, there are the professions whose basic subject matter is the human being and for whom the problem of interpersonal relationships is on the same level of importance as the skills and techniques needed in the practice of these more scientific and technical aspects. Included in this category are physicians, lawyers, social workers, psychologists, and teachers. I am sure you will agree with me that the dietitian definitely belongs in this latter category.

I think, however, that we must continue a bit further in our evaluation. Within this category of professions dealing primarily with people, there are still several distinctions which must be made. There are some professions in which contact with people is of a positive sort. Such professional persons in rendering service can be more readily perceived by the recipient in a pleasant and satisfying way. A lawyer, for example, who handles some technical matter in regard to a property settlement or investment of funds is viewed as relieving a source of worry or tension. I am not sure how a school boy might view a teacher. The recipient in this case might not feel so positive about the guidance and help he is receiving, but at least from the viewpoint of adults and of society in general, this relationship is a highly positive one.

When one is dealing with the sick individual, however, the picture is somewhat different. The doctor, for example, may be perceived by the patient in different ways. He may be seen as the source of security and reassurance, as the agent of relief from distress and discomfort, but he may also be associated with denial, with restrictions, with limitations in living. Of course, our rational judgment and our

[1] Published with the approval of the Chief Medical Director, Veterans Administration. The statements and conclusions published by the author are a result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration. Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland on October 12, 1951.

perception of the reality of the situation may make it possible for us to understand the need for the doctor's action and may also make us appreciative in the long run of the service he is rendering. But emotionally, he may still be associated with deprivation, pain, and suffering. Because of this, the doctor must be all the more sensitive and understanding of the psychologic processes involved in the interpersonal relationship between himself and his patient.

THE DIETITIAN'S ROLE WITH THE PATIENT

It is in this same professional grouping that the dietitian belongs. Moreover, the psychologic problems in the relations of the dietitian with the patient become even more magnified because of the special area in which the dietitian and patient must work—the area of food and eating. There are few areas of human activity charged with more emotional energy and based on attitudes and habits dating back to earliest infancy than are food and eating. The infant's first source of gratification from the mother is food, and it is almost equally true that the infant's first deprivations and his first feelings of frustration are centered around food. Throughout the child's entire development, his food and eating habits become a major tool in the very complex problem of adjusting to human beings. On the one hand, food may become for the mother a means of bribery, punishment, or reward. It may become the same for the child. Or it may become a means of defense or revenge.

These early habits and attitudinal patterns continue with us into adult life. Consider our gestures of friendship by inviting someone to "break bread" with us. Consider the very common attempt to make up for a loss or a defeat by some form of alimentation—whether it be eating or drinking. Consider the sense of prestige or belonging to the group associated with the kind of table we set. And from the viewpoint of groups rather than individuals, consider how deeply food has entered into the folkways and mores, as indicated by special foods associated with particular national or ethnic groups. Consider the taboos and sanctions on food related to special religious customs and ceremonies.

This theme can be elaborated *ad infinitum*. Suffice it to say that in many respects the psychologic adjustment of the individual to the people around him and to life in general is intimately associated with eating habits which go back to the earliest period of life. It is quite understandable, then, that anything closely related to an individual's pattern of eating, his choice of foods, and so on, is charged with tremendous emotional energy.

PATIENTS' REACTIONS TO DIETARY RESTRICTIONS

Let us consider some of the possible reactions of the sick person for whom certain dietary restrictions or regulations become necessary. The equilibrium in a very significant area of his life has been upset. He may be asked to deny himself a major source of gratification. He may see his illness in general, and the restriction on food in particular, as an expression of failure or weakness in himself. He may perceive the whole situation as something which sets him apart from and inferior to the "healthy" person. Or, he may react emotionally to the dietary plan exactly as he did to food denial which may have been used as a punitive measure in his childhood. He may rebel against it inwardly because he sees it as a hardship on his family, in terms of additional financial burden, or in terms of preparing special dishes, additional servings, and so on. On the other hand, he may be investing all his hopes for recovery in the dietary aspects of his treatment when other aspects of the treatment are equally or more important.

Another possibility is that the patient's physical illness may satisfy other needs in him. There may be considerable "secondary gain" from his illness. The patient may enjoy the attention that the family must now give him. He may enjoy the situation of being forced to relinquish responsibility as a result of being sick. He may even get gratification from the inconvenience to his family. In short, he may not want to get well. He may look upon the dietary regimen as something that will rob him of a new source of gratification, neurotic though it may be.

Finally, as a defense against any of the above suggested implications of the illness, he may develop an attitude of indifference to the illness itself or to any measures designed to alleviate it or change it in any way.

SETTINGS FOR PATIENT CONTACTS

It is often within this framework that the dietitian may have her first contact with the patient. Is it any wonder, then, that in this initial contact, the dietitian may see before her a patient who is depressed, discouraged, overconcerned, hostile, resentful, or perhaps, worst of all, entirely indifferent? To this kind of a situation the dietitian must bring all the psychologic skills of which she is capable in order to utilize her scientific knowledge.

What are these skills, and how are they best utilized? Before we can deal with this question effectively, we must consider the various settings in which the dietitian will have her contacts with the patient. It may be in the private office or the home, or again it may be in the hospital or out-patient clinic. She may have opportunity to work with each patient individually. She may see patients in a group situation for one or two meetings and then follow them up individually. Perhaps the pressure of work is so great that almost all of her contacts with patients may be in groups, and there will be a minimum opportunity to individualize the contacts. Each situation creates conditions peculiar to itself.

In a recent informal survey of a group of about twenty-five dietitians, the consensus was practically

unanimous in favor of working with patients individually. That is an excellent idea. But realistically we know that it can't always be done. We may have to work with groups. Accordingly, we should recognize the factors in the group situation that can be used to greatest advantage for instructing the patient in specific matters of his diet or for overcoming some of the previously mentioned psychologic barriers which make it more difficult for the patient to relinquish unhealthy emotional attitudes related to his dietetic problems.

Some of the obvious advantages of working with the individual need be mentioned only briefly: (a) We are more likely to get across the specific bits of knowledge or information related to the problem of this particular patient. For example, we may be able to tell the patient the particular stores in his area which carry dietetic foods; or we may work substitutes into his menu to fit his own taste. (b) We can adjust our presentation to the patient's specific level of intelligence or education, taking into consideration any language barriers or allowing for national or ethnic traditions in the uses of certain foods. (c) Equally important, we have more opportunity to deal with, or at least to take into account, the patient's emotional reactions to his illness and to the dietary regimen with all that this implies.

PROBLEMS OF GROUP SITUATIONS

Many of these situations become more difficult to deal with in the group. We now must work in terms of the least common denominator, to present our material in a way which is understandable and acceptable to everyone in the group despite the variations in intelligence, education, language difficulties, and so on. We cannot touch as easily on the particular financial or technical problems involved for each person in following through on his diet. And most certainly we cannot hope to deal with the intricate emotional reactions of each person to his sickness and his present plight.

There are the psychologic problems inherent in the group dynamics, in the interrelationship and interactions among the various members of the group. There is, for example, the individual who, though feeling relatively free to discuss his problems in a face-to-face contact, will "clam-up" in the group. At the other extreme is the show-off, the monopolizer of the group's time, the one who will use the group for an airing of anything from highly personal and intimate problems to general political discussions or conversation about the weather.

In addition, there are the problems created specifically by the physical set-up inherent in the group. For example, the use of visual aids in the group calls for special techniques and procedures not necessary in contacts with the individual patient. If we use charts or models, we must learn to coordinate the presentation of the verbal material with these aids. We must even watch for such things as the seating arrangement of our patients so that all can see the demonstration.

On the other hand, it would be a mistake not to recognize some of the positive features created by the group situation. For one thing, there are many matters that will be brought up in the group which are important to an individual patient but which both he and the dietitian might overlook in the individual interview. The freedom of some of the members of the group in discussing their problems may serve as a stimulus to the more reticent members who would find it difficult to discuss certain things even in an individual situation.

Finally, we must not underestimate the sources of emotional strength on which the individual can draw from his contact with the group. The individual patient may be less prone to self-pity when he sees others equally handicapped. It may be a source of comfort to him to feel that others in the group do not look upon their problems as insoluble. He may be reassured by seeing them accept their diets as a necessity at the same time that they do not allow it to dominate their lives or to disrupt their patterns of work and their daily routines any more than is absolutely essential. All of these subtle factors can be utilized to advantage in the group situation.

Space does not permit us to consider in detail some of the possible solutions to specific problems raised in the individual interview or in the group situation. There are, however, certain basic psychologic considerations which are true in any type of contact that the dietitian will have with the patient—which, in fact, must be true in any interpersonal relationship that is to be of positive therapeutic value. We can follow a thousand and one specific instructions in regard to our dealing with a patient, but our efforts will never be as effective as they might be if we do not take full cognizance of some of the basic principles which we will discuss at this point.

MOTIVATION

First is the question of adequate motivation. Early in the history of classical experimental psychology it was established that in order to study some basic problems, such as, for example, how we learn, we could do this only by developing adequate motivation in the subjects, whether they were animals or human beings. This applies to any type of learning—learning the names of people, the caloric value of certain foods, or new attitudes toward ourselves, our sicknesses, and our limitations.

Unfortunately, we cannot work on the assumption that when a patient comes to see the dietitian, he is properly motivated. Earlier in this paper we suggested many of the feelings that might be operating in the patient at such a time. For example, we pointed out that the patient's adjustment to his illness may be the need to deny its severity and its crippling

effects, hence he has no motivation to learn what to him are irrelevant and unnecessary things, or as a protective mechanism he may react with complete indifference born of a feeling of hopelessness or despair. In short, we cannot assume a motivation to get well. In some cases we cannot assume that the patient does not prefer to remain ill. Until the patient wants to learn, little can be accomplished in the way of explaining methods of counting calories or any necessary principles and techniques involved in dietary control.

We cannot deal in detail with the specific methods of motivating the patient. The method must fit the patient and the situation. We will do many things automatically and without effort if we understand the way he feels, and why he feels that way. Perhaps a point of warning should be made here. I am not advocating that the dietitian relinquish her role as dietitian and suddenly become a psychotherapist. I am simply pointing out that a sensitivity to the attitude of the patient toward his illness and toward the dietetic instruction will make it more likely that the interview or the training session will be conducted in such a way as to enhance the value of the meeting to the patient.

MAINTAINING THE PATIENT'S INTEGRITY

The next principle to be observed in the interpersonal relationship is adequate consideration for the maintenance of the self-respect and integrity of the patient. It would be difficult to overestimate the importance of this factor in the relationship with the patient. Only to the extent that one can hold on to a feeling of self-esteem can he afford to relinquish defensive reactions in his dealings with others.

It is the rare individual who can take the deprivations involved in a long-sustained illness, or who can take the limitations imposed on him because of his illness, without having his evaluation of himself suffer in some way. He may begin to feel that it was a sign of weakness in him to become ill in the first place, he may feel that he is less of a person now because of his illness, he may exaggerate the feeling of being a burden to others. He may, of course, cover these up by a smoke screen and react in a callous or indifferent manner. He may use any one or any combination of the various neurotic adjustments in the armamentarium of even the healthy human being. But these defenses will be less necessary if the patient can maintain his sense of self-respect, of being as important as the next person despite his limitation.

It then becomes our task in our contact with the patient to create an atmosphere which makes this possible. He must sense from us a feeling that we do not look down upon him in any way, that we respect him as a human being, that we recognize the problem he faces, and that our task as a specialist, in whatever area it might be, is to give him the knowledge and the technique necessary to overcome a very realistic limitation. He must feel that only in this one area are we here to give advice or training. The long and short of it is that we endeavor to create within the patient the feeling that we hold him in respect and that we consider him as a human being the equal of any other.

HONESTY AND SINCERITY

This brings us to our next principal point in the matter of establishing and maintaining a good interpersonal relationship, and that is basic honesty and sincerity in working with the patient. This is one place where we cannot bluff. A pitying attitude will be recognized intuitively by a patient for what it is. If we really feel the patient is inferior to us, this, too, he will sense. If we are indifferent to the patient and to his problems, but profess an interest, the patient will not be fooled. In short, it is most difficult to prevent our real attitude toward the patient and toward his illness from expressing itself in our dealings with him.

This matter of honesty to the patient goes beyond the question of our attitudes toward him or toward his illness. It must be reflected in the way we deal with his immediate concrete and specific problems. If a patient is seriously ill and knows it, then we are unwise to minimize the severity of his illness. If a patient must undergo severe restrictions in his diet or must limit all types of physical activity, for that matter, it would be most unwise to attempt to bluff the patient into believing that these restrictions are not so bad and he will not mind them. A patient who senses this lack of honesty will feel that the dietitian does not really understand him or his problem and will accordingly find it more difficult to accept from her even the factual bits of information about which there should be no question.

On the other hand, if the patient exaggerates his condition and we, being aware of this, are honest in pointing this out to him, we will gain a great deal more respect from him. At a deeper layer of his own feelings he may well be aware of his exaggeration and will respect us for recognizing it. Within the realm of what is sound medical practice and treatment, it becomes most important that the patient feel he is being treated as a mature individual. He should recognize from our attitude and behavior that he is expected to face his problems realistically without an attempt to minimize the unpleasant aspects of the limitations imposed on him or to magnify relatively minor considerations.

PUT YOURSELF IN THE PATIENT'S PLACE

As an over-all governing principle and one which, I feel, is implicit in the three already discussed is the ability to *feel* oneself in the role of the patient. If we do this, we can much better appreciate the reaction that he has to his illness and to the dietary restrictions it imposes on him. We will understand all

the better why he is resistant, why he is overly concerned, or why is is indifferent. We will appreciate so much more the strength of feeling that he has in regard to his illness and to things related to it. It will then follow automatically that we will know what to do and what not to do in attempting to motivate him. If we understand his point of view, we become much more tolerant towards what we might otherwise judge as irrational or childish behavior, and we can thus maintain a sense of respect and esteem toward him.

That, of course, makes it possible for him to maintain his own sense of self-respect and esteem. Finally, it becomes much easier to be honest and sincere in our relationship with him. We no longer need to resort to evasiveness because of our failure to understand and our consequent fear of saying or doing the wrong thing.

But once again, a note of caution is in order. Feeling ourselves in the role of the patient or understanding sympathetically the way the patient feels is one thing. Overidentification is something else. We must not allow ourselves to identify with him so completely that we lose perspective. If we see things exactly as he does, then we most certainly will be of no help; we will be, in fact, a hindrance. When we overidentify, we begin to see his resistance, his overconcern, his despair, or his indifference as perfectly reasonable and justified. In such a situation we cannot possibly help him to learn or to change. (Perhaps we might even want to undergo the diet with him.)

The most desirable situation is to have sufficient sympathetic understanding and feeling, but at the same time to remain sufficiently objective and detached so that we can bring sound judgment and realistic considerations to bear in a situation where the patient is unable to do so.

SUMMARY

We have dealt in this paper with the second of the two functions of the dietitian, the art of feeding people (and to feed them we must come in contact with them). We have considered briefly the role of the dietitian as a professional person and the particular problems she faces because of the special area around which her relationships with patients must center. Some of the problems of working with patients individually and/or in groups were also formulated. Finally, we considered several basic principles that should govern the interpersonal relationship: (a) the necessity of adequate motivation; (b) the maintenance of the self-respect and esteem of the patient; (c) honesty and sincerity in the interpersonal relationship; and (d) a sympathetic feeling of oneself in the patient's situation tempered with sufficient objectivity to bring good judgment and realistic considerations to bear in getting the patient to learn new facts and new attitudes. Utilizing these principles in a relationship with patients is truly an art, but one that is part and parcel of the profession of dietetics.

International Dietetic Congress

The first International Dietetic Congress will be held in Amsterdam, The Netherlands, July 7 through 11, under the auspices of the Netherlands Dietetic Association. The purpose of the meeting is to provide an opportunity for an exchange of information on nutrition and dietetics applied to the welfare of the peoples of the world.

Dr. Margaret A. Ohlson, President of The American Dietetic Association and Head, Foods and Nutrition Department, Michigan State College, will be the official A.D.A. representative. Thus far, twenty-two members have made plans to attend the Congress at which dietitians and nutritionists from over twenty countries will be present. Members of the medical profession who are concerned with the study of nutrition and dietetics will also attend.

Morning sessions throughout the week will be devoted to lectures on physiologic, psychologic, and educational subjects related to the fields of nutrition and dietetics. Americans who will present papers are: Dr. Mildred L. Bricker, University of California, Los Angeles—"Minimum Nitrogen Requirement under Conditions of Controlled Food Intake"; Professor Ancel Keys, University of Minnesota, Minneapolis—"The Cholesterol Problem"; and Dr. Icie Macy Hoobler, Director, Research Laboratory, Children's Fund of Michigan, Detroit—"Maternal and Child Nutrition."

Since the educational systems and the academic requirements in dietetic training differ in the various countries represented, a common ground of understanding will be sought through an exchange of ideas during each of the afternoon sessions. Members of the American group who are scheduled to speak are: Dr. Margaret A. Ohlson—"The Dietitian in the Educational Field"; Helen Cahill, Dietetic Division, Department of Medicine and Surgery, Veterans Administration—"The Hospital and Clinic Dietitian"; Col. Miriam Perry, Women's Medical Specialist Corps, U. S. Air Force—"Dietetic Training and Profession"; Helen Ger Olson, Kansas State Board of Health—"The Dietitian in Public Health"; Dr. Mildred Bricker—"The Dietitian in the Field of Research"; and Helen Robertson, Cleveland *Plain Dealer*—"Dietitians in Journalism, Business, and Industry." Speakers from Australia, Belgium, Brazil, Canada, France, Great Britain, Hungary, Italy, The Netherlands, New Zealand, Norway, South Africa, and Sweden will also talk on the dietetic fields in their respective countries.

Personality Growth and Nutrition[1]

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FOR nearly a half century we in the United States have been holding White House Conferences on children, in order that we may look back over progress and ahead toward new horizons. Most of these conferences have been held at the time of some great national emergency—the end of World War I, the beginning of the depression, the start of World War II, the Korean crisis. Yet in spite of such emergencies, the Conferences were held—for the problems of children are that important to us.

Last year at your annual meeting in Washington, Dr. Leona Baumgartner gave you a preview of the 1950 Conference (1), known as the Midcentury White House Conference on Children and Youth. I shall not try to review here in any detail what happened during the week of the meetings. Interesting as those days were (and they were exciting), they represent only a small part of a much larger and more significant undertaking. The real work of the Conference took place in the months before and will continue into the months and years after the meeting. Though a goodly number of people attended the meeting—some six thousand—through the efforts of local committees, many thousands more were sensitized to the needs of children and are now actively working in their communities in behalf of children.

In connection with the 1930 White House Conference, money was available to carry out studies and develop monographs on many aspects of child life. For years these volumes were widely used as source material and are still referred to, but in the twenty years since that Conference, many studies have been carried out and much has been written. For this reason, instead of using the limited resources available to the Midcentury Conference to gather new data, the decision was made to limit the fact-finding to a review of what we know about personality development and the services and institutions which influence the growth and development of children. Many people in universities, in government, in public and private agencies contributed time and knowledge in developing a series of basic documents from which a fact-finding report could be drawn.

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 9, 1951.

In going through the document on nutrition (2) which was a part of the basic material, one is impressed with its optimistic note. Though we lack adequate objective data, we have reason to believe that the trend in nutritional status of children in this country has been upward in the last twenty years. The food consumption picture has never been better. New methods of processing and of the distribution of foods have added greatly to the quality of our diets. The premise I wish to develop is not how ill-fed we are in this country, but how well-fed we are. I do this not from a sense of pride, or of superiority, or of finality in achievement, but rather because where we are now marks a new starting line for future progress. Our attainment frees us to move forward on a new level and with a new approach to nutrition.

NUTRITION AND THE HEALTHY PERSONALITY

We are not hungry in this country as hunger is known elsewhere—hunger to the point of starvation. Our standard of living is high, and our people have become educated to want a good diet. There are, of course, still great areas of need. In spite of a high wage level, the rising cost of living makes inroads on the market basket. Families in marginal groups may "get along" but are obviously not well fed. Some children do not get enough to eat, and some won't eat what is available. Compared to the rest of the world, however, we have reached a level where we can be less concerned with filling empty stomachs and more concerned with nutrition as it contributes to the healthy personality.

This was the theme of the Midcentury White House Conference: What is a healthy personality? How do we achieve it? What is the effect of what we do to and for children on what they grow up to be? What do we know and what are the gaps in our knowledge? To answer these questions, the fact-finding staff assisted by consultants reviewed our present knowledge about children, evaluated and interpreted it.

One of the greatest contributions of the Conference was this bringing together and interpreting our present knowledge of personality development. No

one theory was followed, but a fusion was accomplished of Freudian doctrine, of dynamic psychology, of child development concepts, and of cultural anthropology—the whole expressed as a series of stages of development toward maturity. The weaving together of a number of theories was a real accomplishment, especially since the result is expressed in language understandable to many professions. There *is* a common body of knowledge, or at least of theory, that all who work with children should have. Nor should we be scornful of it because much of it is still in the process of being validated. Establishing proof is a slow process, especially in the social sciences. If we were unwilling to use theoretical hypotheses derived from observation and experience as a basis for practice, we would never make progress.

It is now well accepted that children grow physically according to certain general patterns, passing through the same stages though at different rates. It is also accepted that each individual has his own unique pattern and rate. That social and emotional growth take place in a similar way—following a general pattern but with individualization—is much less well accepted. For many years educators have been talking about the "whole child." Yet much research relating to children fails to recognize the interrelatedness of growth in all its manifestations.

Undoubtedly in the years to come many theories will be developed about how we become the kinds of people we are. There is no proof that the developmental stages described by Dr. Erik Erickson for the Fact Finding Report of the White House Conference (3) are the final answer. They do represent, however, a sound working hypothesis. They should be a part of the basic knowledge of all professions who work with children and should become common tools in practice. Let us apply them to child nutrition.

THE INFANT

In the growth of the healthy personality, the first step is the development of a sense of trust. During his first year of life, the infant is engaged in developing this sense of trust, and those who care for him are concerned with fostering it. Satisfying experiences are the foundation of learning to trust people and of avoiding the development of uneasiness and mistrust of the world. The first truly satisfying experience in a person's life is in relation to food. This, it seems to me, is a real challenge to those who feed babies. The satisfaction of this great biologic need, basic as it is to physical survival, apparently is also basic to healthy personality development. Through the satisfaction of hunger, the infant acquires a feeling that the world is a dependable place, and toward the warmth of the person who feeds him he responds with trust. Soon he goes on, of course, to other types of experience, but his start in life, physically, socially, and emotionally was based on the "what" and "how" of his feeding.

A hospital setting presents many problems for the infant who is in the stage of developing a sense of trust. At home his signals produce results. Knowing mothers as I do, I am pretty sure the majority of them respond to the crying of their infants, no matter what the books say. The needs of an individual infant, both with respect to amount and timing of feeding, can be respected in a home situation. In a hospital we have assumed in the past that this was not so. More hospitals, however, are recognizing that rigidity of feeding schedules for infants is harmful, and that modification of hospital routines is possible. Dr. Aldrich's studies of the crying of infants in nurseries for the newborn showed an average daily crying time of 113 min., almost 2 hr. With his genius for using a telling phrase, he said (4): "... one would question the nursing care on any floor where the average adult patient found it necessary to ring the service bell two hours out of every day." In this same series of studies, Dr. Aldrich and his co-workers showed (5) that newborn infants cried much less at home than in the hospital. One of the real advantages of early discharge of maternity patients from the hospital is that quite early in the infant's life the mother can begin to meet his needs and help him develop a sense of trust.

However pleasant this early stage of dependence is to both mother and child, it must come to an end if he is to progress toward mature adulthood. Early in the second year the struggle for independence, for a sense of autonomy in the child, begins. This stage is well-known to every family, though often little understood. It is the "no" period, the stage of vacillation between wanting to be himself and wanting to be a baby still. From the feeding standpoint in our culture, it is probably the most difficult of all developmental stages. Physiologically his food needs are less in proportion to his size, and psychologically he is much less interested in food. Unfortunately, neither his mother's need to feed him nor her interest in his food have lessened much—and so conflict arises. At this stage a willingness on the part of adults to let the child express his whims, to change his mind, to take his food or leave it will pay dividends later.

All of us who have worked in hospitals have witnessed, or have taken part in, the spectacle of forced feeding of an infant fifteen to eighteen months of age. The child, made powerless by "mummying" in a sheet, has food stuffed into his mouth and then has his nose held in the mistaken belief that this will make him swallow. Fortunately such practices are growing rarer, but they still take place.

THE PRESCHOOL CHILD

Many adults have such a drive for power that they are unable to tolerate the growing child's striving for independence. Others in their desire to let the child be himself fail to set the necessary limits to his

freedom. And so he comes through this stage fearful, jittery, and with "problems." These are the children familiar to every nursery school teacher—often brought to her because they won't eat, won't sleep, or because they are overly shy or aggressive.

The lucky child, who has developed a sense of trust in his first year and of autonomy during his second and third, moves smoothly into the stage of initiative in the late preschool years. This is the period of imagination and enterprise. The child is gay, noisy, violent. His play is in imitation of adult roles. The little girl cooks dinner or cleans house. The boy becomes a fireman or cowboy. Children at this time need age mates with whom they can compete and whom they can imitate. Given companions, things to do with, and freedom from too many "no's," the child will come through this stage with a well-developed sense of initiative (and initiative is one of the virtues on which our culture places a high value). Persons responsible for feeding children can probably capitalize on the child's desire to imitate at this stage, just as have the radio and television industries.

Often children of this age will eat without question if allowed to sit down together in a small group and if given some opportunity to choose their food and serve themselves. This is especially true if one of them is a good eater. Hospital routines, usually designed for the convenience of staff, make this kind of an arrangement difficult. Less rigidity and a little more ingenuity, coupled with a knowledge on the part of the staff of the needs and drives of this age, can make the feeding situation contribute to the development of a healthy personality.

THE SCHOOL YEARS

The school years from six to the beginning of adolescence mark a period of fairly steady, calm growth. These are the years of accomplishment, of acquiring knowledge, of learning skills, and of developing a sense of industry. In our competitive society often we have been so concerned with what the child learned that we have failed to take into consideration the child's feeling about his ability to do things. In this period it is essential that he acquire a sense of accomplishment. He must feel that what he does is good. The child who feels stupid and inadequate is a candidate for many of the ills that physicians are called on to treat.

In the days when I practiced pediatrics, it was was not at all uncommon to see a child with a loss of appetite and vomiting or diarrhea, often to a severe degree, whose nutritional status had deteriorated badly and for whom the causative factor was a sense of inadequacy. Other children meet frustration by eating enormously and develop an obesity which in turn presents them with even greater feelings of inferiority. Behind this feeling of failure sometimes lies a reading disability, sometimes a borderline mental capacity, sometimes a rigid and uncompromising school teacher. All efforts to improve the nutrition of such children are wasted if the underlying source of failure is not handled. It is possible that inadequate nutrition affects a child's school progress. The opposite is equally true. Failure of our schools to provide a learning situation in which each child can develop a sense of accomplishment and personal worth is responsible for some types of nutritional failure.

ADOLESCENCE

Much has been written in the last twenty years about adolescence, but we still understand it poorly. This is the period in which the individual seeks a sense of identity, of finding out who he is and what he may become. In our society, this is an especially confusing time, for childhood is prolonged and no clear-cut point marks the change to adulthood. Most primitive societies have rituals which mark the transition into adulthood, thus clearly defining the individual's status for him and for those around him. In our culture, we have different ages for different kinds of growing up. We have an age for going to work, a different age for being drafted, another for voting, and still another for marriage. Small wonder the adolescent does not know whether he is a child or an adult.

As he strives to find out who he is and where he is going, the child gets support and comfort from being like his peers. He must dress as they do; eat what, when, and where they eat; talk their language; and so on. Those who deal with adolescents have lost the game at the beginning if they fail to recognize this great desire to be like other adolescents and the concomitant process of casting aside as worthless all ideas and suggestions which come from adults. The scorn and disgust of the adolescent for his parents' ideas is a natural part of this development of his own sense of identity. This is one of the most crucial stages in the development of a healthy personality. How the adolescent weathers it depends in no small degree on how he has come through the preceding developmental stages. It depends also on wise adults who have mastered their own aggressive drives and can be patient with the struggles of youngsters who are finding their own places in the world. Too often we take the attitude that the adolescent's yen for pop and candy bars is a "bad habit" and can be dealt with by edict, forgetting that it represents an emotional need for independence and defiance which is a necessary part of growing up. The tremendous physiologic need for food at this stage makes it especially important that those responsible for the adolescent's feeding understand his drive and handle his food problems in conformity with his total needs—physical, social, and emotional.

These developmental stages could be phrased in many other ways; they could be adapted to many different professional interests. They are important

to the educator, the nurse, the physician, the social worker. They constitute a sort of universal language about childhood. This common core of knowledge about children not only belongs in the armamentarium of all kinds of United States workers but is probably applicable the world over. Different cultures, of course, put different emphases on these stages, dealing with the central area of conflict with more or with less rigidity. But just as there is a pattern for physical growth of the human being, so there is a pattern for growth and development in the social and psychologic sense.

These theories of personality development may seem abstruse or even fantastic to someone whose discipline has been in the pure sciences. Admittedly, much of it is speculative, but it is important to the world as never before. If we are to have peace ever, it will come about because people want it and work for it. In the long run the kinds of people we have will determine the kind of world we have.

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Next Stop—The Twin Cities

Someday, "See America in Easy Stages," a grassroots travelogue, may well be written by an A.D.A. member who is compatible with typewriter or pen. Such a chronicle is in the making in the minds and experience of those who keep abreast of the developments in their profession by traveling to successive Annual Meetings.

In a relatively short time, Philadelphia, Boston, Denver, Washington, and Cleveland have come to mean much more than circles on a map to many of the members. Those who can arrange October vacations arrive at the scene early or linger afterward to take advantage of the local and neighboring spots of interest.

This year, on the Twin Cities pilgrimage, the "getting acquainted" process can begin with an eminently worthwhile stop-over, Niagara Cave, on the Minnesota-Iowa state line, the largest cave in the Midwest. A secret of the ages until 1924, this subterranean labyrinth boasts a 60-foot waterfall in a rock vaulted dome more than 130 feet high, far below the earth's surface. Its décor includes some of the largest stalactites found in any cave in the central states. These rainbow-hued formations are fashioned by nature at the rate of hundred years for each cubic inch.

Motoring northward, at the junction where Route 63 meets Route 52, lies Rochester, Minnesota, the mecca of the ill who find their way here from virtually every country on the globe. A compelling sight, as one drives over the countryside, is the tower of the Mayo Clinic which rises straight and tall, dominating the landscape and resembling a mosque of the Far East. Here, within the confines of a small community, for the most part dedicated to the restoration of health, are innumerable sights of interest to the dietitian and nutritionist —the almost countless sections of the world-famous clinic; the new diagnostic clinic which is nearing completion; St. Marys Hospital, the largest private hospital in one unit in the United States; and the Rochester Diet Kitchen.

For the convenience of those who have come to get acquainted, Minneapolis and St. Paul have arranged themselves on the east and west banks of the Mississippi, with scarcely a perceptible boundary line, extending disarming friendliness and hospitality. Beautiful broad boulevards and wide-spanning bridges offer smooth and uninterrupted driving from the beautiful residential areas of one city to those of the other.

When in St. Paul, a spectacle well worth viewing is Memorial Hall with its statue in the form of an Indian God of Peace, affectionately called "Whirling Joe" by the residents. Sculptured by Carl Milles, the statue is dedicated to the war veterans of Ramsey County. It is created of Mexican onyx, weighs 60 tons, and stands 36 feet high. It turns 66 degrees left and the same number of degrees right from the center, requiring 2½ hours for the complete 132-degree turn—hence the epithet.

This great north woods country is waiting for October to roll around, ready to greet grassroots explorers.

Weight Control[1]

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OBESITY and dieting are hardy perennial conversational topics like the weather—subjects of great personal interest to almost every one. According to a recent national public opinion poll, 30 million Americans would like to lose some weight, which certainly accounts for the popularity of the tricky diets and the "quickie" reducing fads that we read about so frequently. On the other hand, Shakespeare's Julius Caesar made the famous observation: "Yon Cassius has a lean and hungry look; he thinks too much; such men are dangerous. Let me have men about me who are fat." Caesar would have felt comfortable in present-day America, where not very many of us have "a lean and hungry look." He would have been bewildered by the fact that most of us strive to achieve weight reduction.

It is important to understand that obesity itself is not a disease entity, but a symptom, a concomitant condition. It may complicate existing diseases. Therefore, physicians have been interested mainly in the relation of obesity to various illnesses—particularly the cardiovascular-renal diseases and endocrine disturbances, like diabetes—and in the relationship of obesity to the length of life.

Studies have shown that hypertension is much more frequent in obese individuals (1), and in them, reduction of weight often results in lower blood pressure and improved cardiovascular efficiency. This may explain the decline in the incidence of hypertension and cardiac disability observed in war areas where food has been in such short supply as to cause some weight loss in the general population.

We may say much the same thing of diabetes. The prevalence of diabetes is twice as great in the obese as in persons of average weight (2). If the obese diabetic person had avoided overeating, many experts believe his diabetes might have been prevented, modified in severity, or delayed in its onset. A restriction in diet alone may suffice for the control of the diabetes and at the same time remove the obesity.

It is known—but not yet sufficiently well known—that overweight persons experience a higher death rate. The death rate from all causes is increased 21.6 per cent for individuals who are somewhat (5–14 per cent) overweight; 44 per cent for those moderately (15–24 per cent) overweight; and 74.4 per cent for those more than 25 per cent overweight. The death rate from cardiovascular disease is increased 64 per cent in the obese and the death rate from diabetes, 157 per cent (3).

We could further point out the association of overweight with serious physical impairment. Gall bladder disease sufficient to cause clinical symptoms is especially frequent in overweight people, more so in women than in men—"female, fat, and forty" we learned in medical school. There is good evidence that the frequency of cancer of the endometrium is higher in overweight women. Hernia appears to be more frequent in overweight persons. It is certainly more difficult to repair. Overweight is considered to be an etiologic factor in many cases of degenerative arthritis. But there is no need to labor the point. The frequency with which obese people have both pathologic conditions and higher death rates obviously calls for intensive research and practical control measures (3).

INADEQUACIES IN METHODS OF EVALUATING OBESITY

But before we can learn more about the relationship that may exist between obesity and disease, we must first work out a satisfactory method of defining an obese person. The dictionary definition of obesity is a simple one: "an excess accumulation of fat in the body." But how much fat is an excessive amount? How fat is too fat? To answer this important question we must, of course, do two things: first, work out an efficient way to measure the amount of fat in the body, and then, set up standards of normality by which to evaluate the amount of fat in a particular individual in relation to his total body weight.

We often speak of "overweight" as if it were synonymous with "obese," but such is not always the case, since obesity is simply an excess of fat, not weight. Body weight is the total of the bone, muscle,

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 11, 1951.

fat, and fluid in the body when weighed. We do not yet have a scale that will quickly and easily measure only the amount of fat in the body, although it is the ratio of fat to body weight that is the index of obesity. This distinction is important.

A good illustration of this technical difference between overweight and obesity is the study that two investigators made of a group of professional football players (4). The study pointed out that: "According to standard height-weight tables, the majority of the football players could be classified as unfit for military service and as not qualified as risks for first class insurance by reason of overweight," yet examination revealed that they had little fat and could not, therefore, be considered in any way obese. To sum up, knowing only a person's weight is not enough.

Nor is knowing a person's height definitive in evaluating the significance of body weight. Relating body weight to height or to "body build"—whatever is meant by that—or to age . . . all these are used to estimate obesity by inference, the inference being that an excess of weight above what seems normal is due to an excess of fat in the body. This may be a pretty shaky conclusion to draw, but such is the reasoning behind the height-and-weight tables familiar to all of us. Aside from the erroneous identification of obesity with overweight that seems to be implicit in the use of a height-and-weight table, there are, it seems to me, other serious defects in the tables we are now using.

First, the population on which the existing height-and-weight tables are based is a selected population and not a representative sample of the general population. The people measured for the tables were, in the main, persons who were accepted for insurance, and insured risks are certainly not representative. In many cases, the measuring itself was not standardized; some people were simply asked to state their weight. Nor do height-and-weight tables take into account differentials due to both aging and "body build." You can use a table showing "normal" weights at various ages, or you can use a table showing "normal" weights for persons of one of three "body builds" at age twenty-five. But you can't find completely satisfactory tables which give "normal" weights for a person of a particular "body build" at various ages. And finally, the height and weight measurements on which some of our present tables are based were originally made at the turn of the century, although it has become a statistical cliché to say that as a nation we are getting taller, heavier, and older.

The inadequacies that I have pointed out in our methods of evaluating obesity have been recognized by many investigators. Their research has, therefore, centered on the problems of measuring one of the most variable characteristics of the human body, the amount of "excess" body fat. One promising experimental method is that of measuring the thickness of skinfolds. Another technique that may prove fast, cheap, and accurate is the use of X-ray. The shadows cast on the film may be measured to give the relative amounts of bone, muscle, and cutaneous plus subcutaneous tissue. Two other methods now being studied are estimation of the total excess fat after measuring the specific gravity of the body and estimation of body fat when the body water content is measured.

METHODS OF CONTROL

While the importance of basic research of this kind cannot be overemphasized, we can look for methods of control of obesity even before we have precise methods to measure its extent. We knew that bed rest was a good treatment for tuberculosis long before we had devised critical diagnostic methods, and we are still looking for more accurate ways of measuring the progress of this much-studied disease. Despite the dearth of basic knowledge that I have cited here, every physician has many patients who can be clinically diagnosed as obese without any hesitation. There are plenty of clear-cut instances when we easily know that it would be better for the patient to weigh less. We need not know precisely where the norm is to know that these patients are far from it. But how good are our therapeutic methods? What can we do for the obviously obese?

As we have tried them in the past, weight reduction programs have not been satisfactory for many patients, and we need not look far for the reason. Most people are fat simply because they overeat, not because of an appreciable endocrine imbalance. There are persons who can manage to control their intake of food after receiving professional dietary advice—and they pose no problem. But some overweight persons cling to their excessive eating habits for reasons too strong to be overcome by good dietary advice alone. To help such a patient, we must seek an answer to the question: "Why does he eat too much?"

One way to study this key question is through individual psychotherapy. Clinical study of obese patients sometimes brings to light a history of deprivation, either economic or emotional. Food is the means by which they satisfy their needs for affection or material security, and the greater these needs, the more voracious the eating. When such persons can find more satisfactory ways of coping with their emotional problems, they are then able to curb their excessive appetites.

GROUP APPROACH TO WEIGHT CONTROL

But if the millions of people who should lose some weight needed such individual psychiatric assistance —and few of them do, of course—we would be unable to help them. Fortunately, the desire of most obese

people to reduce is strong. It was felt that some form of treatment could be developed between brief dietary instruction on the one hand and prolonged psychotherapy on the other. In this belief, the U. S. Public Health Service initiated a pilot study of the group approach to weight control.

This project was a cooperative undertaking of the Public Health Service and the Massachusetts Public Health Department. Because of its two decades of interest and experience with group therapy in other fields, The Boston Dispensary of the New England Medical Center was chosen for the pilot study. For example, weekly group meetings led by physicians at The Boston Dispensary had helped patients adhere to the limitations of the Kempner rice diet for the treatment of hypertension. It seemed likely, therefore, that similar methods might assist persons who needed support while following the advice of their physicians in losing weight and in maintaining desired weight.

There were four criteria for admission to the groups. They were: (a) recognition by the person that he was above his optimal weight; (b) a desire to do something about it; (c) ability to attend the group meetings as scheduled; and (d) the approval of his physician. Thus he was assured that no physical ailment contraindicated an attempt to lose weight. In turn, this knowledge was important to him for the successful application of the group discussion method. I hardly need emphasize to dietitians the hazard of undertaking any regimen of weight reduction without a physician's examination and recommendation.

During admission interviews, applicants were discouraged from their eagerness to believe that this method offered a quick and easy answer to the problem of obesity. They were given sympathy and the feeling that the staff wanted to help them, fully understanding how difficult their problem had been. All subjects knew that this was an experimental group and that there were plans for a long-term follow-up of the members.

Each person who was accepted for the experiment determined the amount of weight he wished to lose each week and his own weight goal. Although assignments were made to the groups without regard to sex, age, occupation, or economic status, the evening group consisted mainly of employed persons, and the afternoon group was made up principally of housewives. The first groups were planned as a series of sixteen weekly discussion periods of 1 hr. each. During this time it was hoped to understand better the problems of the overweight person and something of his attempts to solve them.

It was possible to find leaders who were experienced in group therapy and interested in applying this experience to the treatment of groups of overweight persons. The task of the group conductor was to encourage an atmosphere conducive to a free and easy discussion of the problem of overeating. His role was to be a good listener, not to give advice or criticize.

The groups discussed how a person feels when he must start another effort to lose weight, how he reacts to discouragement, and how he feels when he is unable to stay on his diet. Members were encouraged to look for the special meaning that food may have for the overweight person and possible reasons for eating more than is called for by physical requirements. Information was exchanged freely about common difficulties and individual accomplishments. Since all members of the group had the same problem, they were able to view their achievements according to the standards of the group, instead of the more rigid standards of their family or friends who were much thinner. Success was viewed more realistically and, therefore, became more attainable.

A majority of the group members believed they knew what they ought to eat to lose weight and merely needed help in following their restricted diet. When they described their previous diets, it was found that in many instances they had been attracted to fad diets and other magical solutions to their problem. Private consultations were, therefore, held in the Food Clinic of The Boston Dispensary, at which nutritionally adequate diets were planned to meet the individual needs of the patient in carrying out his physician's instructions. This also helped overcome fear that losing weight would cause weakness or illness. Members of later groups which met outside the Dispensary received individual instruction from health department nutritionists.

RESULTS

Since it is easier to lose weight than to maintain the weight loss, it was felt that evaluation of the results achieved should be based not only on the weight lost during the group sessions, but also on the maintenance of this loss some time afterwards. Data from a one-year follow-up of the results attained by 102 overweight persons enrolled in six Boston groups are now available. The majority of the persons were middle aged (median age 45.2 years, range 21 to 72) married (74 per cent) housewives (65 per cent). Only eight were men. The vast majority had attempted to lose weight one or more times in the past.

Of these 102 persons enrolled, about half attended more than eight of the sixteen sessions. At the beginning of the sessions, the percentage of excess weight ranged from 10 per cent to 149 per cent above so-called normal, with 64 members at least 30 per cent overweight. The experience can be summarized as follows: Of the 102 persons reported here, 47 had *lost* 10 per cent or more of their excess weight by the end of the follow-up period, while 15 had *gained* 10 per cent or more. Forty showed no great amount of weight loss or gain.

So many people applied for admission to the groups that sufficient facilities were not available at The Boston Dispensary. The Brookline Health Department, therefore, sponsored a group which met in the Brookline Library. Two members of the first group sponsored another group in a neighborhood settlement house. With little additional publicity, registration for two groups was subsequently held at the YWCA in Boston. The YWCA also requested assistance in procuring a leader: one of its members had been such an enthusiastic member of an earlier group that she organized twenty-seven women for a series of sessions. Other hospitals and neighborhood houses have been interested in establishing similar programs. Group members are referring many of their friends and relatives to such groups. Four of the groups held in The Boston Dispensary still meet for discussions.

CALIFORNIA STUDY

Further knowledge about obesity and the group therapy approach is also being sought by the new Department of Research at the Herrick Memorial Hospital, a private, nonprofit community hospital in Berkeley, California, through a project financed by the State Department of Health. This study has been designed to serve research purposes, as well as to improve the personal health of the approximately one hundred participants. There they are experimenting with different kinds of leadership. One group is led by an internist, others by a psychologist, a health educator, a social worker, and a public health nutritionist.

Before admission to a group, each applicant was interviewed and given a complete physical examination by the resident medical, clinical, laboratory, and dietary staffs of the hospital. Special attention was given to family history, the weight curve, distribution of adipose tissue, and the condition of the heart. Laboratory tests included blood sugar, hemoglobin, cholesterol, urinalysis, chest X-ray, and electrocardiogram.

While the group members are improving their eating practices and maintaining a standard reducing diet, research workers will collect and analyze data on their physical conditions and the changes influenced by diet. Serial studies of blood cholesterol and "giant molecule" lipoprotein are being conducted by the Donner Laboratory of the University of California.

The group method of weight control may be a practical and successful way of meeting this difficult public health problem. Certainly this method is worthy of further research and trial in other places. If, with the cooperation of the medical society and private physicians, a health department can provide sponsorship, space for meetings, orientation, training of group conductors, and statistical services for evaluation of results, we believe that groups of this type will thrive with a minimum of promotion and publicity. Coordination of these groups with existing community health programs will depend upon local needs in relation to local resources, such as interested hospital clinics, and the support given by the community and its voluntary agencies.

OTHER METHODS OF ATTACK

Promising as the search for more effective treatment may be, we cannot neglect further basic research into the problem of obesity. The difficulties of measuring and evaluating obesity which I mentioned earlier need not deter us from planning a broad attack on other frontiers of the problem. In my opinion, such investigations might well utilize an approach which has proved particularly successful in nutritional research. To the extent that mass diseases or disabilities represent problems of population groups, epidemiology is the method of choice, and from the little we know, obesity seems to be a promising subject for its application.

Indeed, our past experience with obesity seems to have been leading us to such investigations. We have already gathered considerable information from the examination and treatment of individual obese patients, in what might be called the bedside approach to the problem. We have begun to investigate the diagnosis and treatment of obesity under the controlled conditions that characterize laboratory research. Since historically the study of other pathologic conditions has first passed through these two stages and then moved into studies of such conditions in large population groups, it seems appropriate now to consider the next steps required to increase our knowledge of obesity.

The first step, of course, is to improve our diagnostic techniques so that we can readily determine who is obese. This is a tremendous task, to be sure, but a beginning has been made and progress will come. When we are able to diagnose with precision, we can then examine selected samples of various populations to learn who the obese are and what their characteristics are. The application of this technique to the problem of obesity should contribute to a better understanding of the relationship between obesity, life, and disease. The influence of obesity on specific disease, as well as the effect of these diseases on obesity, should be studied by mass methods. Such investigations may also contribute to increased knowledge of causative factors. To what extent is obesity due to social, physiologic, economic, psychologic, or hereditary factors? To what extent is obesity due to combinations of these factors? When we know more about the causes of obesity, of course, we may find it possible to adopt preventive measures.

The dietitian and nutritionist must continue to play an important part in the progressive study and treatment of obesity, because we are basically dealing with the problem of eating for good health. As clinical

and field research is pursued, and as improved methods of treatment are devised, members of The American Dietetic Association will be further called upon to contribute their knowledge and skills to the cooperative attack on obesity by the health professions. It could not be otherwise.

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How the FDA Protects Jam and Other Foods

Preserves and jams have come a long and sticky road to high standards. Wallace F. Janssen, Assistant to the Commissioner, Food and Drug Administration, recently addressed the National Preservers Association giving these products as a sample case history on food standards. As a high school boy in the 1920's, Mr. Janssen reminisced about the "pretty awful" jams at the grocery store where he clerked. A few imported preserves were of high quality, but "some of the domestic products were obviously adulterated—we all knew it because you could . . . see a few strawberries suspended in the jelly."

In the 1920's, the only official standards were the Bureau of Chemistry's so-called "advisory standards." They provided for pure preserves and for compound or low-fruit preserves. "Imitation jam," rather than meaning what the Supreme Court today says it means, was made of artificially colored and flavored jells, with fruit pulp, seed, or even grass seeds to give it a "fruity" look. Fruit content went down from 40 per cent to as low as 20 or even 15 per cent.

Then, after the crash of 1929, the overbuilt preserve industry was forced to go after values with low prices. About that time refined pectin was developed. In normal times, perhaps pectin would merely have permitted the industry to make better preserves and jelly without green fruit. However, the industry used pectin to thicken sugar and water. Thus a way was found to substitute sugar and water for fruit.

Government legislation began in 1930 with the passing of the McNary-Mapes Amendment to the Pure Food and Drug Law, also known as the "Canners' Bill," which provided for the same kind of substandard label on low-grade canned foods as does the present law. Standards, however, were provided only for canned fruits and vegetables. A special amendment providing for jellies and jams was introduced during the 71st Congress, but effective opposition from some ingredient manufacturers prohibited its passing.

The NRA allowed the preserve industry to adopt a Code of Fair Practices, including product standards. Unfortunately, before any cases could be developed on substandard preserves, the "death" of the Blue Eagle had taken place. In 1936, an appeal was made by the National Preservers Association to the Federal Trade Commission for a Trade Practice Conference. This called for a set of product standards—a novelty in FTC Trade Practice Rules. The Food and Drug Administration supported the effort with expert testimony and evidence, and finally the FTC issued the rules including the standards.

From 1933 to 1938, a series of bills was pending in Congress to replace the old Pure Food and Drug Act with a modern and more effective statute. These bills provided for food standards, and at first they also provided for grade labeling. Throughout these five years, preserves were often cited as a prime example of the need for standards. The Copeland Bill finally was passed, and in 1940 standards for preserves were issued.

Hearings during the five years of discussion and debate, Mr. Janssen said, "brought out clearly the fact that homemade and commercial jams and preserves are basically identical, as shown by cookbooks and formulas going back 200 years and more. They showed that preserves and jams are the same thing, made of fruit and sugar in approximately equal parts. Even the Supreme Court agrees that is what you must use to make jam.

"Today," Mr. Janssen added, "standards have been promulgated under the Federal Food, Drug, and Cosmetic Act for more than two hundred different foods, in sixteen different categories. Most of these are what we call standards of identity—they establish what the product is—what it contains. They set up maximum limits on cheap ingredients, and minimum limits for desirable and costly ingredients below which they must not fall. They designate the ingredients which must be used so that the product will meet consumer expectations, and they rule out ingredients that so change the product that it is not what the consumer expects. They are the 'gold standard' of our foods, in that they fix their real values [and] symbolize the real American standard of living."

Weight Reduction Using a Moderate-Fat Diet

II. Biochemical Responses[1]

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FOUR dietary studies on weight reduction in college women have been reported (1–6). Three have used reducing diets characterized by moderate levels of protein and carbohydrate and by low levels of fat. In the study by Leverton and Rhodes (3), a portion of the subjects received a higher protein level—105 gm. per day. The fourth study from Ohlson's laboratory (5, 6) used a low-carbohydrate, moderate-fat, and high-protein diet.

All of these investigators gave evidence that restriction of the caloric intake of obese young women alters their nitrogen, calcium, and phosphorus balances so that retentions of these nutrients are less than when caloric intake is adequate. In each study, calcium deficit during weight restriction has been reported in at least a portion of the subjects.

The present experiment was designed to study nitrogen, calcium, and phosphorus retentions, blood nutrient levels, and blood cholesterol and lipid levels on a 1400-calorie, high-protein, moderate-fat, and low-carbohydrate diet developed by Ohlson (7). Findings during a weight maintenance period prior to weight reduction are contrasted with those obtained at the middle and at the end of an eight-and-a-half-week reducing period.

METHODS

The general plan of the experiment has been given in a previous paper (8). Briefly, ten college women 21 to 51 lb. overweight, with an average excess weight of 34.7 lb., were placed on a 1400-calorie weighed diet for a period of eight and a half weeks. Weight losses ranged from 9 to 23.5 lb., with an average of 17 lb.

The subjects were first studied for a three-week pre-reducing period during which they received a maintenance diet similar in nitrogen, calcium, and phosphorus composition to the reducing diet. This balance period served to establish a base line from which variations could later be figured. The pre-reducing period was followed by the eight and a half weeks on a 1400-calorie reducing diet, which was calculated to contain approximately 80 gm. carbohydrate, 90 gm. protein, and 80 gm. fat.

Nitrogen, calcium, and phosphorus retentions for each of the ten subjects were determined at three intervals during the study: during the pre-reducing maintenance period and approximately halfway through and at the end of the reducing period. Retentions were based on analyses of the seven-day samples of the intake and excreta. To avoid menstrual periods for all subjects, two successive balance periods were scheduled at each of the intervals described above. Each subject was then fitted into one or the other of these periods.

All food intake was sampled as the food was served. The seven-day composite was pooled and slurried. Nitrogen, calcium, and phosphorus determinations were made on an aliquot from the slurry. A portion of the slurry was then dried in a Desivac for later determination of fat content of the diet. In addition, each student kept a measured record of all water intake, and the water supply was analyzed for calcium and phosphorus.

For each subject completeness of the 24-hr. urine samples was checked by daily creatinine determinations; aliquots were then taken from the samples and pooled on a seven-day basis. Feces were marked by carmine and pooled for analysis of the seven-day sample. Nitrogen was determined by the Kjeldahl method (9); calcium by the micromethod of Kochakian and Fox (10); and phosphorus by the colorimetric method of Koenig and Johnson (11). Fat in the diet was determined in Desivac-dried samples by means of extraction with ethyl ether for 16 hr. in a Bailey-Walker apparatus. The ether was evaporated and the extracted fat was weighed after drying in the receiving flask for 2 hr. at 75°C. under vacuum.

In Table 1 are given the calculated composition of the diet at different stages of the experiment and a comparison of the calculated and analytical values for protein, fat, calcium, and phosphorus in the

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TABLE 1

Calculated and analyzed values of the basic maintenance and reducing diets

PERIOD	CALCULATED CALORIES	PROTEIN		FAT		CALCULATED CARBOHYDRATE	CALCIUM		PHOSPHORUS		CALCULATED IRON	CALCULATED VITAMIN A	CALCULATED THIAMINE	CALCULATED RIBOFLAVIN	CALCULATED NIACIN	CALCULATED ASCORBIC ACID
		Calculated	Analyzed	Calculated	Analyzed		Calculated	Analyzed	Calculated	Analyzed						
Pre-Reducing Maintenance Diet																
		gm.	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
1st balance	2109	89.9	91.1	110.2	110.3	200.5	0.996	1.243	1.504	1.586	13.8	14,288	1.41	2.07	17.0	121
2nd balance	2108	89.8	83.9	110.1	127.6	200.5	0.992	1.171	1.501	1.486	13.8	14,288	1.41	2.07	17.0	121
Reducing Diet																
3rd week	1396	90.7	90.6	80.8	71.8		1.000	1.004	1.394	1.347						
4th week	1396	90.9	89.8	80.7	71.9		1.006	1.028	1.399	1.336						
7th week	1400	90.7	84.8	79.7	91.1		1.001	1.010	1.394	1.316						
8th week	1401	90.6	85.7	81.4	92.0		1.000	0.997	1.385	1.466						
Average for 8½ weeks...	1400	90.7		81.3		80.6	0.999		1.393		11.7	11,233	1.39	2.17	15.7	99
Final Maintenance Diet																
1st week	1766	88.9		79.9		185.0	1.066		1.487		14.1	12,504	1.45	2.16	15.8	123
2nd week	1694	89.5		80.1		162.6	1.064		1.504		12.8	10,881	1.29	2.21	15.8	105

balance periods. It will be noted that in certain instances the analyzed protein values were somewhat lower and fat values somewhat higher than calculated values. It is assumed that this was due to differences in the leanness and fatness of meat cuts, though identical cuts from the animal were used.

In order to see how well blood nutrient levels might be maintained with this diet, which was calculated to meet the National Research Council's Recommended Dietary Allowances (12) except for calories, capillary blood samples were taken during the pre-reducing period and at the approximately four- and eight-week intervals after starting the reducing diet. Hemoglobin, carotene, vitamin A, ascorbic acid, alkaline phosphatase, and free and total riboflavin levels were determined by the micromethods of Bessey and Lowry (13).

Because there might be some concern about the possible elevation of blood lipid and cholesterol levels with the relatively high proportion of calories from fat in the diet and from the metabolism of body fat, fasting samples of venous blood were taken from all subjects on the last day of the reducing regimen. It is to be regretted that samples were not taken in the pre-reducing period to be used as a basis for comparison. Serum cholesterol values, both total and free, were derived by the modified Schoenheimer-Sperry method (14). Blood lipids were determined by the colorimetric method of Bloor (15).

RESULTS

A summary of the nitrogen, calcium, and phosphorus retentions for the three seven-day balance periods on the ten subjects is given in Table 2. In interpreting these figures, the author followed the practice of Leverton (4) of attaching no significance to retentions or losses of calcium or phosphorus which were less than 10 per cent of the intake or to retentions or losses of nitrogen which were less than 5 per cent of the intake because of difficulties in being sure that the fecal composite represented accurately the intake supposedly marked by the carmine.

Nitrogen. During the pre-reducing maintenance period on an intake of 13.5 to 14.5 gm. nitrogen per day, nine of the ten subjects stored appreciable nitrogen while the tenth subject (No. 3) was essentially in balance. After three to four weeks on the reducing regimen which contained approximately 14.5 gm. nitrogen per day, the majority of the subjects were still showing retention. However, Subject No. *2* showed a deficit and three subjects (No. *1*, *3*, and *9*) were essentially in balance. By the seventh and eighth weeks of the reducing regimen, the number of subjects showing nitrogen deficits had increased to six, although two of the six were just at the 5 per cent level. One subject (No. *4*) was in nitrogen balance and two (No. *6* and *7*) were still retaining nitrogen. The nitrogen intakes of the latter balance period, though calculated to be the same as previous periods, actually were 13.57 and 13.71 gm. per day, respectively.

Calcium. In the pre-reducing maintenance period, on a calcium intake of 1.19 to 1.33 gm. per day, all ten subjects were storing appreciable quantities of calcium. By the third to fourth week of the reducing regimen with an intake of 1.01 to 1.09 gm. per day,

TABLE 2

Mean daily retentions of nitrogen, calcium, and phosphorus

PERIOD	SUBJECT 1	SUBJECT 2	SUBJECT 3	SUBJECT 4	SUBJECT 5	SUBJECT 6	SUBJECT 7	SUBJECT 8	SUBJECT 9	SUBJECT 10
					Nitrogen					
	gm./day	*gm./day*	*gm./day*	*gm./day*	*gm./day*	*gm./day*	*gm./day*	*gm./day*	*gm./day*	*gm./day*
Pre-reducing	2.400	0.857	0.529	1.342	2.271	2.043	1.171	1.900	1.343	3.600
Reducing—3–4 weeks	0.028	−1.257	−0.071	3.286	1.814	1.471	0.929	1.014	0.529	1.000
Reducing—7–8 weeks	−0.757	−2.143	−1.257	−0.457	−1.600	1.586	3.171	−1.685	−0.671	—*
					Calcium					
Pre-reducing	0.259	0.500	0.367	0.430	0.228	0.300	0.250	0.371	0.280	0.531
Reducing—3–4 weeks	0.013	−0.068	0.039	−0.059	0.007	−0.166	0.347	−0.009	−0.051	−0.042
Reducing—7–8 weeks	−0.114	0.139	−0.061	−0.291	−0.221	−0.624	−0.153	−0.356	0.318	—*
					Phosphorus					
Pre-reducing	0.541	0.679	0.350	0.457	0.400	0.529	0.293	0.514	0.450	0.697
Reducing—3–4 weeks	−0.235	−0.281	−0.238	0.247	−0.095	−0.109	0.079	−0.121	0.164	0.136
Reducing—7–8 weeks	0.195	−0.226	−0.084	−0.627	−0.134	−0.269	0.052	−0.326	−0.041	—*

* No data due to non-cooperation of subject.

only one subject (No. *7*) was retaining calcium; eight were essentially in balance; and one subject (No. *6*) was in calcium deficit. By the seventh to eighth week on the reducing regimen, two subjects (No. *2* and *9*) were still retaining calcium; one subject (No. *3*) was essentially in balance; but six were in definite calcium deficit. It is of interest that Subject No. *9*, who was still retaining calcium, previous to the experiment had refused to drink any fluid milk.

Phosphorus. In the pre-reducing maintenance period on an intake of 1.49 to 1.61 gm. phosphorus per day, all ten subjects were retaining phosphorus. At the third to fourth week of the reducing period, with an intake of 1.34 gm. per day, three subjects (No. *4*, *9*, and *10*) were in retention; four were essentially in balance; and three (No. *1*, *2*, and *3*) were in phosphorus deficit. By the seventh and eighth weeks, on an intake of 1.32 to 1.46 gm. per day, only one subject (No. *1*) was still in phosphorus retention; four were in balance; and four (No. *2*, *4*, *6*, and *8*) were in definitely negative balance.

Blood Values

Microdeterminations for blood levels of hemoglobin, carotene, vitamin A, ascorbic acid, and free and total riboflavin were made in the pre-reducing period and again after three to four and seven to eight weeks on the reducing scheme. On the dietary regimen used, without supplementation, the values for all blood nutrients studied for all periods were in the good or excellent ranges according to the classification used by Bessey and Lowry (16). For one subject (No. *6*), hemoglobin values were in the fair range throughout the experiment. One other subject (No. *9*) started with a hemoglobin in the fair range, but during the reducing period her value advanced to the excellent range.

TABLE 3

Blood lipid and cholesterol values at the end of the reducing period

SUBJECT	BLOOD LIPIDS	BLOOD CHOLESTEROL		
		Total	Free	
	mg./100 ml.	*mg./100 ml.*	*mg./100 ml.*	%
1	775	240	69.0	28.8
2	800	258	71.5	27.7
3	630	220	62.0	28.1
4	985	326	94.0	28.8
5	675	180	48.5	26.9
6	425	165	50.0	30.3
7	642	186	53.0	28.5
8	840	163	53.0	32.5
9	892	246	70.0	28.5
10	585	153	47.0	30.7

Cholesterol and Lipids

The fasting lipid values for all subjects at the end of the reducing regimen fell within normal limits with the possible exception of Subject No. *4* (Table 3). She was also the subject with the lowest basal metabolic rate. The total cholesterol levels in the blood were within normal limits, with the possible exception of Subject No. *4*. The percentages of free cholesterol were all within normal range, including that for Subject No. *4*, although her absolute value for free cholesterol was high. It is interesting that the cholesterol value for Subject No. *2* was the second highest, since her basal metabolic rate showed the greatest drop and yet her weight loss was the least of all ten subjects (8).

DISCUSSION

Nitrogen Balance

These biochemical findings are interesting and not easy to explain. In comparison to previous studies, the nitrogen loss was great on a relatively high nitrogen intake. All subjects stored large quantities of nitrogen in the pre-reducing maintenance period. After three to four weeks on the reducing regimen most (nine of ten) of the subjects were still storing nitrogen, yet in the final periods, six out of ten were definitely in negative balance. It is conceivable that during the pre-reducing period with adequate calories and high-protein feeding, the labile nitrogen stores were being built up. Then, during reduction under caloric stress, there was a breakdown and burning of the labile protein, resulting in increased nitrogen excretion (17). The magnitude of nitrogen loss or retention did not seem to be related to the degree of weight loss.

Calcium Retention

The problem of decreased calcium retention during weight loss is still far from solution. During the pre-reducing maintenance period, all subjects demonstrated their ability to make significant retentions of calcium on an intake of slightly over 1 gm. calcium. Yet after three to four weeks on a reducing diet containing approximately 1 gm. calcium, the majority of subjects were no longer retaining calcium although they were essentially in balance. By the seventh to eighth week, six of the ten subjects were showing definite calcium deficit. What is the significance of this loss?

Various possible explanations for the poorer calcium retention during weight reduction have been advanced by previous investigators. One of the simplest (3) has been the possibility that inclusion of greater quantities of cellulose, through the use of more fruits and vegetables in the conventional reducing diet, results in greater gastrointestinal motility and hence less opportunity for absorption of calcium.

A second possible explanation has been related to level of protein intake. Kunerth and Pittman (18) and McCance *et al.* (19) found that mineral retention was improved when protein intake was increased. Leverton (3) found that there were no significant differences between average performances of her two groups on 60 and 105 gm. protein daily in respect to calcium or phosphorus retention. However, she reported that four individuals on the high-protein intake (105 gm. daily) were in negative calcium balance as compared to one person on the 60-gm. level.

The third possible explanation of poor calcium retention has been related to the fat content of the diet. It was thought possible that the low fat content of the conventional reducing diet might hinder calcium absorption. Leverton (4) further suggests that the ratio or proportion of fat from butterfat, which yields more fatty acids, may be a factor in the lower calcium retentions. In her 1949 study there was better calcium retention on essentially the same protein, fat, and calorie levels when over one-half of the available fat came from butterfat sources than in the 1951 study were less than one-fourth was of butterfat origin.

More recently Steggerda and Mitchell (20) have pointed out that conceivably dietary fat may affect calcium metabolism and utilization in either a favorable or an unfavorable fashion. They have reported studies on the effect of variable levels of milk fat (from 1 to 32 per cent on a dry matter basis) on the utilization of dietary calcium by adult men. No effect on calcium metabolism was noted either in the amount retained or in the proportion of excreted calcium found in the stools. It should be noted that in general the calcium intakes studied were lower than those used in the investigations of weight reduction.

None of the proposed explanations seems to be the answer. In this experiment, calcium retention during reduction was still poor, in spite of: (a) a high protein intake; (b) a fat intake of 80 gm.; (c) over one-third of the fat from butter sources; and (d) the low bulk of the diet so that gastrointestinal motility was slowed to a minimum. Calcium retention appeared to become poorer as the length of the period increased. Since the final balance periods came at the end of the semester not long before final examinations, it is difficult to say how much psychosomatic influences may have been reflected in the poorer retention. It has been suggested that nervous tension may have considerable influence. Certain it is that this influence was not exerted through increased gastrointestinal motility in this instance. Pressures of approaching final week *may* have been a factor, although the greater negative calcium balances occurred in Subjects *4*, *6*, and *8*, in the first of the final balance periods, a time three weeks removed from final examinations. The magnitude of either calcium or phosphorus deficit seems to be in no way directly related to the magnitude of weight loss.

The problem of real concern is whether the impaired calcium retention found consistently during weight reduction continues after the individual is established at her ideal weight. Brown and Ohlson's earlier work (2) suggests such a possibility. No further studies have been reported on this to date. This laboratory hopes to continue investigations in this area. Combination of calcium with ketones and subsequent elimination cannot be ruled out, since urinary ketones were not determined. However, the increase in urinary excretion of calcium was not sufficient to account for negative balances which were encountered.

SUMMARY

Ten college women, 21 to 51 lb. overweight, were studied for a three-week pre-reducing maintenance period, followed by an eight-and-a-half-week period on a 1400-calorie reducing diet which was high in protein, moderate in fat, and low in carbohydrate. Nitrogen, calcium, and phosphorus balance studies were made during the pre-reducing period and after approximately four and eight weeks on the reducing diet. Blood nutrient levels and cholesterol and lipid levels were also studied.

As weight reduction progressed, the nitrogen, calcium, and phosphorus retentions of the subjects fell below those of average college women. Two-thirds of the subjects were in definitely negative calcium and nitrogen balance by the seventh and eighth weeks on the reducing regimen. The high-protein, moderate-fat, low-carbohydrate reducing diet employed in this study did not correct the physiologic shortcomings (nitrogen, phosphorus, and calcium balance) of the more conventional reducing diets.

Blood nutrient levels remained high throughout the entire experiment.

The fasting cholesterol and lipid values of all subjects at the end of the reducing period fell fairly well within normal limits with the possible exception of one subject.

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Comparison of Fresh, Frozen Concentrated, Canned Concentrated, and Canned Orange Juice[1]

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THIS study was undertaken to evaluate the relative merits of fresh, frozen concentrated, canned concentrated, and canned orange juices obtained on the local market at monthly intervals for a period of one year. Per cent solids, ascorbic acid content, and *p*H were determined; prices and yields were recorded; and the palatability of the juices was rated. In addition, ten lots of freshly prepared orange juice were frozen in a home-freezing unit and examined after one, two, and three months' freezer storage.

Numerous articles in the literature report values for the ascorbic acid content of fresh orange juice; the effects of freezing, canning, and storage on the amounts of ascorbic acid present; and the changes in flavor caused by processing. However, this information does not, except by inference, answer the questions a consumer has concerning the ascorbic acid content, palatability, and cost of different types of orange juice which can be purchased.

Lockhart and Gainer (1) compared the cost per ounce and acceptance of early season Florida Valencia orange juice, two semi-concentrated frozen Florida juices, and two canned juices. The fresh juice was slightly, but not significantly, preferred to the frozen juices, and the canned juices were significantly less preferable than either the fresh or the frozen. Rakieten *et al.* (2) analyzed fresh orange juice prepared from oranges purchased in ten key cities throughout the country and reconstituted fresh-frozen juice similarly obtained. The mean values for the ascorbic acid contents of the freshly squeezed orange juice and the reconstituted frozen juice were 42.9 and 48.3 mg. per 100 ml., respectively.

However, more information is needed, and the present investigation was planned so that the results would indicate the relative merits of the types of orange juice available at a local store during a twelve-month period. Extending the comparison of orange juices throughout a year obviously gives a more comprehensive picture of the characteristics of each type than does a comparison performed once. On the other hand, analyzing orange juices available at a local store may or may not give results that are typical of fresh, frozen, and canned orange juices on other markets or on the same market at other times.

EXPERIMENTAL PROCEDURE

The fresh oranges and different brands of frozen and canned orange juice were purchased from February 1950 through January 1951 as available each month at a local independent grocery. In addition, a canned low-temperature concentrate and two brands (designated as D and E) of canned orange juice were obtained from local chain stores. The number of months in which analyses of different types and brands of orange juice were made is indicated in Table 1. Unavailability of samples decreased the total numbers in some instances, and different brands of canned orange juice were included since the same brands were not available throughout the year. Fresh Florida and California oranges, size 200, were purchased in 1-doz. lots and two brands of frozen orange juice concentrate and one of canned concentrate in cans containing 6 and 5½ fluid oz., respectively. Seven brands of canned juice, including California and Florida, sweetened and unsweetened juices, were investigated. Cans of these brands held from 12 to 46 fluid oz. The retailer furnished information concerning the arrival of new crops of oranges or new packs of processed juices, but the lengths of time elapsing after harvesting and processing were not known, and varietal information was unfortunately incomplete.

Retail prices of the oranges and juices were recorded for comparison of costs.

The oranges and canned juices were kept in a refrigerator and the frozen juices in a home-feerzing unit. Analyses were made within one to five days after purchase.

Fresh California or Florida orange juice was prepared by hand-reaming 1 doz. oranges and straining the juice through a conical aluminum sieve to re-

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move the coarse pulp and seeds. The frozen orange juice concentrates were partially thawed at room temperature and then diluted by the addition of three cans of cold water to a can of concentrate, while the canned concentrate was diluted by adding five cans of cold water. The yields were recorded. In addition to the sixty analyses of processed juices, duplicate runs on the contents of a second container were carried out in thirty-one instances.

Each juice was thoroughly mixed, and samples were taken for palatability tests and for determinations of total solids, ascorbic acid content, and *pH*. Four members of the food research staff rated the appearance, color, flavor, and general acceptability of coded orange juices, usually four samples in one day. A five-point scale was used for scoring where 5 corresponded to excellent, 4 good, 3 fair, 2 poor, and 1 very poor. The amounts of reduced ascorbic acid were determined by the method of Loeffler and Ponting (3), and total solids by drying aliquots of the juices first on a steam bath and then in a vacuum oven. The *pH* values were measured with a Leeds and Northrup *pH* meter.

Frozen orange juice, prepared and frozen according to methods which might be used in the home, was similarly evaluated. Lots of fresh Florida and California oranges were purchased on four days and reamed as before. Seven batches of juice, each consisting of 3 pt., were immediately transferred to pint Ball freezer jars and frozen and stored in a home-freezing unit at −10°F. Three batches were

TABLE 1

Ascorbic acid and total solids of different types of orange juice

TYPE OF ORANGE JUICE	FEBRUARY 1950	MARCH 1950	APRIL 1950	MAY 1950	JUNE 1950	JULY 1950	AUGUST 1950	SEPTEMBER 1950	OCTOBER 1950	NOVEMBER 1950	DECEMBER 1950	JANUARY 1951	MEAN AND STANDARD DEVIATION OF THE MEANS
Ascorbic Acid													
	mg./gm.	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*	*mg./gm.*
Fresh													
California oranges	0.62	0.66	0.54	0.47	0.45	0.53	0.44	0.49	0.47	0.47	0.57	0.44	0.51 ± 0.021
Florida oranges	0.48	0.41	0.37	0.39	0.42	—	—	—	—	0.49	0.36	0.48	0.42 ± 0.019
Frozen concentrated*													
Brand A	0.52	0.50	0.47	0.48	0.38	0.30	0.52	0.45	0.51	0.43	0.33	0.38	0.44 ± 0.022
Brand B	—	—	0.43	0.40	0.34	0.35	0.48	0.44	0.32	0.31	0.46	0.40	0.39 ± 0.019
Canned concentrated	0.56	0.54	—	0.46	0.38	0.36	0.36	0.34	0.35	0.32	0.34	0.29	0.39 ± 0.027
Canned†													
Brand A	—	0.50	0.48	0.48	0.48	0.38	—	0.33	0.36	0.34	—	0.45	0.42 ± 0.023
Brand B	0.40	—	—	—	—	—	—	—	—	0.47	0.39	0.39	0.41 ± 0.019
Brand C	—	—	—	0.40	0.38	—	—	—	—	—	0.30	0.33	0.35 ± 0.023
Brand D	—	—	—	—	—	—	—	—	—	0.41	0.41	0.39	0.40
Brand E	—	—	—	—	—	—	—	—	—	0.37	0.30	0.35	0.34
Brand F	—	—	0.38	—	—	—	—	—	0.48	—	—	—	0.43
Brand G	—	—	0.45	—	—	0.29	—	—	—	—	—	—	0.37
Total Solids													
	%	%	%	%	%	%	%	%	%	%	%	%	%
Fresh													
California oranges	13.3	14.5	15.2	13.4	15.6	11.5	11.1	11.2	11.8	12.3	13.2	13.9	13.1 ± 0.44
Florida oranges	11.7	12.9	13.7	14.7	12.5	—	—	—	—	10.2	9.2	12.9	12.2 ± 0.64
Frozen concentrated‡													
Brand A	12.3	11.1	12.2	12.4	12.7	12.1	11.8	11.9	11.9	11.6	11.8	11.6	12.0 ± 0.12
Brand B	—	—	12.3	12.2	11.9	12.6	12.0	12.0	12.0	11.5	11.8	12.2	12.0 ± 0.10
Canned concentrated	12.8	12.8	—	11.4	15.9	12.3	11.6	11.8	12.0	11.2	11.3	11.6	12.2 ± 0.40
Canned §													
Brand A	—	12.0	13.1	13.4	13.1	13.2	—	13.3	13.9	13.2	—	11.9	13.0 ± 0.22
Brand B	13.5	—	—	—	—	—	—	—	—	12.8	12.8	13.0	13.0 ± 0.17
Brand C	—	—	—	14.1	14.3	—	—	—	—	—	13.7	13.8	14.0 ± 0.14
Brand D	—	—	—	—	—	—	—	—	—	12.1	12.4	12.8	12.4
Brand E	—	—	—	—	—	—	—	—	—	13.8	14.0	14.2	14.0
Brand F	—	—	14.4	—	—	—	—	—	13.9	—	—	—	14.2
Brand G	—	—	13.6	—	—	13.8	—	—	—	—	—	—	13.7

* Mean for both brands: 0.42 ± 0.015.
† Mean for all brands: 0.40 ± 0.012
‡ Mean for both brands: 12.0% ± 0.08.
§ Mean for all brands: 13.3% ± 0.13.

strained before freezing. After one, two, and three months of freezer storage, a sample from each batch was removed from the freezing unit, thawed overnight in a refrigerator, and used for palatability tests and determinations of total solids, ascorbic acid, and *pH*.

RESULTS AND DISCUSSION

Values for total solids and ascorbic acid contents of different types of orange juice analyzed at monthly intervals during a year and of the means and standard deviations of the means calculated therefrom are presented in Table 1. During the twelve-month study, the mean ascorbic acid contents of the orange juices were: fresh California, 0.51 ± 0.021 mg. per gram; fresh Florida, 0.42 ± 0.019; two frozen concentrates, 0.42 ± 0.015; canned concentrate, 0.39 ± 0.027; and seven canned, 0.40 ± 0.012. The mean value of 0.51 mg. per gram for fresh California orange juice is significantly[2] higher than each of the other mean values for different types, while none of the differences between the mean ascorbic acid contents of the other juices are statistically significant. Throughout the year the ranges in amounts of ascorbic acid present in all types of orange juice were large, and there was some overlapping of values. The monthly figures for ascorbic acid content are given in order to present a clear picture of the amount and kind of variation which occurred, not as a recommendation to purchase any particular type of orange or juice. It must be remembered that growing conditions, processing schedules, and marketing practices vary from year to year. In general, the higher figures for ascorbic acid content of each type of juice were correlated with the availability in the local store of new crops of fresh oranges or new packs of processed juices.

Harding, Winston, and Fisher (4) found that the largest amounts of ascorbic acid were usually present in immature Florida Valencia oranges and that as fruit ripened, the concentration of ascorbic acid in the juice gradually decreased with the lowest values occurring late in the season. Roy and Russell (5) showed how the ascorbic acid contents of reconstituted frozen concentrates varied directly with those of the fresh oranges which were processed from December to June. Other factors which affect the amounts of ascorbic acid in the fresh or processed juices are variety, rootstock, growing conditions, the nature of the commercial processes, and finally the conditions and length of storage before analysis. When different types of orange juice are purchased on the open market, the samples are not comparable with respect to these factors.

The mean percentages for total solids ranged from 12.0 ± 0.08 for the two brands of frozen orange juice to 13.3 ± 0.13 for the seven brands of canned juice. The latter value is significantly higher than the former, while the other mean values for total solids are not significantly different. As shown in Table 1, the total solids content of the strained fresh juices varied more during the year than did the per cent solids of individual brands of frozen or canned orange juices.

Throughout the year the mean *pH* values were 3.6 ± 0.05 for fresh California orange juice; 3.7 ± 0.05 for fresh Florida juice; 3.7 ± 0.02 for the two frozen concentrates; 3.8 ± 0.05 for the canned concentrate; and 3.5 ± 0.02 for the seven brands of canned orange juice. Although the differences were small, the mean *pH* values for fresh Florida, frozen, and canned concentrated juices were significantly higher than the mean value for canned juices.

Good agreement was obtained in analyzing two samples of a brand purchased at the same time. Mean differences between fifteen duplicate samples of frozen juice, ten of canned, and six of canned concentrated orange juice were 0.01 mg. per gram for ascorbic acid, 0 for *pH*, 0.2 per cent for total solids, and 0.1 in general acceptability.

The mean palatability scores for appearance, color, flavor, and general acceptability and the mean retail costs of 100 ml. (approximately a 3.5-oz. serving) of all the types of orange juice are presented in Table 2. Fresh California and Florida orange juices were rated significantly higher than all the processed juices, while California orange juice received significantly higher mean scores for color and general acceptability than did the Florida orange juice. The mean scores for general acceptability were: 4.8 for fresh California, 4.5 for fresh Florida, 3.9 for two brands of frozen concentrates, 3.2 for the canned concentrate, and 2.9 for the canned orange juices. The frozen orange juices were significantly more palatable than the canned concentrated or canned juices. Apparently some of the brands of canned orange juice were considered as good as the canned concentrated juice while others were not. A watery or cloudy appearance and a pale color in many of the canned juices were given as reasons for low ratings and, in the majority of judgings, the canned concentrated and canned orange juices were scored low because of the presence of bitter flavors.

The mean cost of a 100-ml. serving of California orange juice was 7.8 cents, a figure significantly higher than the mean costs of any of the other orange juices. It is interesting to note that the mean cost of a serving of fresh Florida orange juice was the same as that of the canned juices and that the mean cost of a serving of frozen orange juice was lower than these. The cost of the canned concentrated juice was significantly the lowest. However, it should be remembered that this juice was obtained at a local chain store, while the oranges and the majority of processed juices were purchased at an independent

[2] A difference was considered significant if it was three or more times as large as the standard error of that difference.

TABLE 2

Mean palatability scores and costs per serving of different types of orange juice

TYPE OF ORANGE JUICE	NUMBER OF MONTHS IN WHICH TESTS WERE MADE	PALABATILITY					MEAN COST*
		Number of judgments	Mean score*				
			Appearance	Color	Flavor	General acceptability	
							¢/100 ml.
Fresh juice							
California oranges	12	44	4.8†	4.9‡	4.7†	4.8‡	7.8‡
Florida oranges	8	31	4.6†	4.4#	4.6†	4.5†	4.4‖
Frozen concentrated							
Brand A	12	45	4.0	4.0‖	3.8#	3.9#	3.8‖
Brand B	10	37	4.1#	4.2#	3.8#	3.9#	3.7‖
Canned concentrated	11	41	3.8	3.4	2.8	3.2§	2.8
Canned							
Brand A	9	34	3.8	3.9	2.8	3.1	5.3
Brand B	4	16	3.4	3.3	2.2	2.7	3.7
Brand C	4	15	3.6	3.7	2.5	2.9	4.2
Brand D	3	12	3.7	4.3	2.2	2.6	4.2
Brand E	3	12	3.5	3.5	2.4	2.8	2.5
Brand F	2	8	3.8	3.5	3.0	3.2	4.8
Brand G	2	8	3.8	3.6	2.9	3.2	4.1
Means of the brands			3.7	3.7	2.6	2.9	4.4**

* Standard deviations of the means and significant differences between these means were calculated.
† Significantly higher than corresponding means for all processed juices.
‡ Significantly higher than corresponding means for all other types of juice.
# Significantly higher than corresponding means for canned concentrated and canned juices.
‖ Significantly higher than corresponding mean for canned concentrated juice.
§ Significantly higher than corresponding mean for canned juices.
** Significantly higher than corresponding means for frozen Brand B and canned concentrated juices.

store. Comparative costs are affected to some extent by the place of purchase as well as by the size of the container.

Mean values for the retention of ascorbic acid in home-frozen strained and unstrained California and Florida orange juices after freezing and one, two, and three months of freezer storage were 96, 93, and 94 per cent, respectively. Corresponding mean figures for the general acceptability of the home-frozen juices were 3.3, 3.2, and 3.3, indicating ratings of slightly above fair. Since the mean scores for general acceptability of the two commercially frozen juices were 3.9, it is evident that they were considered preferable to the home-frozen juices. The lower mean flavor ratings of the home-frozen juices were the determining factors in the lower acceptability scores. During one to three months' freezer storage flat or bitter off-flavors developed to varying degrees in different batches.

SUMMARY

Orange juice, freshly prepared from California oranges purchased in a local independent store at monthly intervals during a year, had a mean ascorbic acid content of 0.51 mg. per gram, which was significantly higher than the mean ascorbic acid contents of fresh Florida orange juice or any of the types of processed juice which were investigated. The mean values for the amounts of ascorbic acid present in fresh Florida juice, two frozen concentrates, a canned concentrate, and seven canned orange juices were very similar, ranging from 0.39 to 0.42 mg. per gram.

The palatability scores indicated that freshly prepared juices from California and Florida oranges were considered between excellent and good; the frozen concentrated juices, slightly above to slightly below good; and the canned concentrated and canned juices, below good to below fair. The fresh juices were significantly more palatable than the two brands of frozen juices, and these in turn were rated significantly higher than the canned concentrated or canned juices.

California orange juice, costing approximately 7.8 cents for a 3.5-oz. serving, was a less economical source of ascorbic acid than the fresh Florida orange juice or any of the processed juices. The mean cost of a similar serving of canned orange juice, 4.4 cents, was higher than the costs of servings of two brands of frozen concentrate, 3.8 and 3.7 cents.

The retention of ascorbic acid in orange juice frozen by home methods was high, being between 93 and 96 per cent, after one, two, and three months of freezer storage. However, unpleasant flavor changes occurred during freezer storage, and at the present

time the home-freezing of orange juice is not recommended.

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Flavor Becomes a Science

Food and beverage producers, for the most part, did not discover until five or six years ago that sophisticated tools exist for determining what flavors will please the majority of people and for maintaining uniformity of flavor. These tools, moreover, need not be objective.

Three large food companies, noted for their research in flavor, answered the questions: "How do you find out what people like?" "What have you learned about the public taste?" and "How do you maintain uniform flavor in your products?" One company first subjects its products to a body of experts with sensitive noses and tongues, then to a "control" group of persons heterogeneous as to taste-sensitivity, and finally distributes them at random to office employees for comment. The others followed slightly different procedures, but their systems were essentially the same: experts were important, but could be wrong. In fact, the first concern occasionally sends a voted-down product to be sampled outside the office, just in case all may have been wrong. Color is one of the test methods, e.g., a dessert powder is tested to see if all flavors taste "orange" under an orange light.

The basic change in methods is that companies now try to make products which most people will enjoy, rather than those which executives and experts say people ought to like. Few large food businesses will dare to launch a product today which has not been screened by a preference survey, whereas in 1937 such surveys were made sporadically, if at all.

American food tastes are becoming more standardized; food producers find that they usually do not need to cater to regional tastes as they once did. However, minorities still exist, but it is believed that small companies will take care of the man who likes "different" things.

Acquired taste is still a mystery; when newly born, a person is equipped with a taste for sugar and little else, unless it be for bland, slightly salted food. It is mentioned, however, that the man of forty whose taste runs in the direction of Roquefort cheese and Scotch whisky is no longer a target for the canned spaghetti, marshmallow confection, and breakfast food producers, although his children are.

Profit has been realized many times over by companies who give thought to flavor. The housewife is glad to pay 10 cents more for coffee which tastes better. Another striking example is the preference for costly butter over inexpensive but equally nutritious margarine.

Bread bakers are the "die-hards" in the new movement towards flavor. To them as well as to nutritionists, the American taste for soft white bread puzzles them and leaves them with the viewpoint of "Oh, well, all we want to do is *sell* bread." The baker seems to feel that the consumer cares nothing for bread flavor, since the bread will be covered with butter, jelly, or sandwich filling as soon as the wax paper is ripped off. Experts, however, believe that bakers as well as other food companies could benefit greatly by flavor research.—*Excerpted from: What Has Happened to Flavor? Fortune 45: 130 (April), 1952.*

The Problem of Obesity

It is estimated that there are 30 million people in this country who are 10 per cent overweight and 15 million who are 20 per cent overweight. Repeatedly, studies have shown that the mortality rates are higher among obese individuals than those of ideal body weights. Furthermore, obesity is associated with an increased prevalence of and death from the degenerative diseases. Diabetes and obesity are closely tied together. The harmful influence of obesity in arthritis and in cardiovascular disease is a matter of record. It appears, from the record, that neither the present lot nor the prognosis of the obese is a happy one.—*Excerpted from "A Newer Plan of Weight Control." Nutrition Reviews 10: 81, 1952.*

Current Comment

COMBINED CONFERENCE ON ADMINISTRATIVE AND SCIENTIFIC ASPECTS OF FOOD IN CIVIL DEFENSE

HOMER N. CALVER[1]

Special Advisor at London Conference on Administrative and Scientific Problems of the Food Aspects of Civil Defense

Civil defense feeding of an individual will usually last no longer than seven days and in no instance longer than thirty days, except for hospitalized patients. Delegates to the Combined Conference on Administrative and Scientific Aspects of Food in Civil Defense, held in London in December, were told that this was one of the basic assumptions in United States planning.

The London Conference brought together American, British, and Canadian representatives from fields concerned with feeding and food supply in an emergency, including many members of civil defense organizations. Held under auspices of the British Ministry of Food, the conference represented the most extensive pooling of information on civil defense feeding yet achieved. Plenary sessions were held in Church House, Westminster, in the same room in which the House of Commons met after it had been bombed out of its regular quarters.

After the first week's plenary sessions, delegates visited Coventry, Birmingham, Hull, Peterborough, Nottingham, Liverpool, and Aberdeen—areas which had suffered in the air raids of World War II. Local authorities described the food supply and feeding situations they had to contend with and methods they devised to solve them. In Hull, "curbside cooking" was demonstrated by members of the Women's Voluntary Services, and the use of large-scale improvised cooking equipment was demonstrated by the British Army Catering Corps.

That emergency feeding should be a strictly emergency program was declared by the Conference to be a fundamental principle of planning. The earliest possible return to normal commercial feeding channels is imperative. Restaurants, hotels, hospitals, and institutions of all kinds must all open their doors for business as soon as they can do so.

It was stressed also that civil defense is a civilian responsibility and that operational assistance from the Armed Forces in the form of personnel, supply, or equipment may not be available. Responsibility must be faced at the grassroots—by the local government and actually, because of the enormous masses of persons who will be rendered homeless, by the neighborhood itself. Survival will be largely a matter of self-help and mutual help within very small areas. "The street or block which does not have people prepared to rise to an emergency and improvise ways to cook and serve food has not prepared itself," the Conference final report declared.

RULES FOR DISASTER MENUS

Two rules governing the early disaster menu also emerged. It was urged by the British, based on their experience, that the first call on all feeding resources after the incidence of disaster should be to prepare and distribute a hot, sweet drink to affected people as quickly as possible. This will be a vast undertaking but, in the words of the Conference report, it is a "must" if shock is to be relieved and morale and public order restored. Preparations cannot be casual. Mobile canteens equipped with paper drinking cups will be used for on-the-spot service where the need is greatest. Dietitians and food service people in every commercial or institutional kitchen will be expected to help.

A second rule, also calling for immediate cooperation of food experts, is that a good, hot meal—not a snack—must be provided within a few hours. British experience shows that this meal often marks the point at which an individual can and will pull himself together and set about solving his own problems.

CONDITIONS AS THEY MAY BE

To carry on the staggering feeding operation, whether in the early phases or later, trained food workers with the ability to improvise are essential. Food will need to be provided under conditions that may include lack of water supply, electricity, and gas—and these utilities may be gone for a day or for weeks. Workers will have to improvise meals with whatever equipment and supplies they can salvage from the rubble. Ingenuity will be needed, as well as pre-attack training which will prepare workers with general plans for action under different sets of situations. British experience shows that trained workers

[1] Dr. Calver, former Executive Secretary of the American Public Health Association and former Editor of the *American Journal of Public Health*, is widely known for his work as a health officer and educator, a bacteriologist, publicist, and editor. He organized and is now Chairman of a Public Health Committee for the Paper Cup and Container Institute which studies sanitation problems, provides material for training food handlers, and sponsors a monthly publication, *Health Officers' News Digest*.

can get out a meal of some sort even under the worst possible conditions.

Actual cooking may be practically impossible, for instance, and only cold menus would be feasible (although it is recommended that ideally at least one item on each menu be hot for its psychologic effect). Refrigeration and cold storage may be knocked out, thus creating problems with perishable foods.

Automatic dishwashing facilities may be useless if electricity goes dead; and damage to the water supply system or contamination of the water supply would mean that water would need to be imported into many areas, some of which might not have suffered actual bomb damage. British speakers stressed that great quantities of water are necessary for cleaning and sterilizing pots, pans, dishes, cups, and cutlery—much more than one realizes during peacetime. Part of the dishwashing problem can be solved by use of disposable paper eating and drinking utensils, which are standard equipment for mass feeding in the United States. British underscored the value of paper drinking cups and dishes from their experience at Coventry, although British paper shortages limited widespread use during the last war. Non-American delegates were interested to learn that 25 million paper items have been stockpiled in twenty presumptive target areas of the United States by the paper cup and container industry for just such uses.

British speakers pointed out that immediately following a heavy attack, the most urgent food supply problems concern bread and milk—the two basic foods which cannot easily be stored. Regular deliveries of these two foods, they said, proved important in sustaining morale. In blitzed areas where utilities were destroyed and the preparation of cooked foods was difficult, bread consumption rose to six times above normal. Pre-attack planning must provide for keeping baking activities functioning wherever possible. Likewise, provisions must be made in advance for public health protection of milk supplies.

FOOD SUPPLIES AND EMERGENCY NUTRITION

A paper of particular interest to American dietitians was contributed by Dr. James M. Hundley, a Federal Civil Defense Administration representative at the Conference, who outlined FCDA's basic nutrition philosophy. In the first place, in developing menus for emergency feeding manuals, only foods which are cheap should be recommended. They should probably be in good supply under any anticipated conditions, should not be subject to quick spoilage, should be commonly acceptable, and should require a minimum of preparation and work in serving. Unfamiliar or disliked foods will lower consumption and depress morale; thus local preferences should be considered as far as practical.

However, it isn't necessary to provide especially for proteins, vitamins, or accessory food substances, or for factors such as climate, temperature, or racial characteristics for the uninjured if the recommended per capita caloric allowance comes principally from natural food products and with a minimum of highly refined foods, such as cane sugar, enriched flour, and fats. The Federal Civil Defense Administration believes that specific vitamin or mineral deficiencies will not develop within a period of thirty days in previously well-nourished individuals, even if substantially less than the recommended allowances are provided.

An adequate and reasonable (but not a bare minimum) allowance sufficient for a population group of normal age, sex, and physical activity distribution, and with the expected number of injured, is 2000 to 2200 calories daily per capita. Essential civil defense workers, such as fire fighters and others doing heavy labor, should be fed a diet as nearly normal as possible with at least 3500 calories per day. Available food should be equitably distributed to provide for the special needs of these groups and for others, such as infants and pregnant and lactating women, the Hundley paper further stated. Ambulatory patients with conditions usually treated by special diets, such as diabetes, peptic ulcer, and so on, can be treated by medication and without special diets until normal food distribution and preparation can be restored.

Marjorie M. Heseltine, Chief of the Nutrition Section, Children's Bureau, contributed a paper on the special problems associated with feeding healthy and uninjured infants, children, and pregnant and lactating women under emergency conditions. They need special consideration because failure to meet their needs may have lasting consequences for the human resources of the nation, she said. The following criteria should be met in planning for these groups: Hunger must be allayed and physiologic needs for maintenance of health and for normal growth should be met. Both foods and conditions of feeding should help minimize psychologic trauma resulting from the disaster. The essential nutrients must be provided in a form and under conditions that avoid any danger to health through contamination, whether bacteriologic, chemical, or radiologic.

HOSPITAL FOOD SERVICE

Hospitalized patients will require no special foods except for disproportionately large amounts of foods such as milk, eggs, ice cream, and easily assimilated soups. Proteins and protein derivatives used for intravenous feeding are to be classed and stocked as medical supplies.

Of particular interest to hospital dietitians was the U. S. Public Health Service's wartime disaster planning manual for hospital dietary departments. This stressed the urgency of careful advance planning in which the hospital dietary department should participate as part of the hospital's central committee. The dietary department must be ready to provide

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*Eggnog nutritive values from Bowes, A. de P., and Church, C. F.: Food Values of Portions Commonly Used, ed. 7, Philadelphia, College Offset Press, 1951.

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The utmost simplicity in food production and service will be essential. No attempt should be made to follow the usual hospital dietary pattern, dietitians are instructed. In an extreme emergency, a one-dish meal and one beverage may have to be the basic menu with additions being made as supplies, facilities, and staff allow. Special diets, special desserts, and salads would be discontinued. The head dietitian should ration her supplies on hand—usually a two- or three-day supply of perishables and a two weeks' supply of canned goods and staples. These regular stocks should take care of a two- or three-day emergency, after which supplies from outside might be expected. If possible, fresh food on hand should be used first to avoid waste—particularly if the disaster has disrupted cold storage or refrigeration. Canned goods and staples should be used next. While menus will be made according to foods on hand, general plans should be made in advance and reviewed periodically with the cooks.

SANITATION PRECAUTIONS

Extra precautions are necessary to prevent food contamination. Recommended are these steps: Teach all food handlers the importance of cleanliness of body, clothing, and habits. Instruct them in the detection of food contamination, deterioration, and spoilage. Do not allow more than 4 hr. to elapse between the preparation and consumption of foods that are natural carriers of food-borne disease. When food is taken from the store in the main kitchen, each container should be tagged: "Food in this container must be served before (hour and date)."

In the hospital, as in emergency feeding centers themselves, safe water is of highest importance. If the quality of water is questionable and sanitary facilities are inoperative during early phases of the emergency, fresh vegetables should not be served raw, and drinking water should either be boiled for 5 min. or treated with a chlorine compound. In the event of a need to conserve water, consideration should be given to the improvisation of handwashing facilities with some means of disinfecting the hands.

Instruction should be given in water conservation. A hospital normally uses approximately 200 gal. water per patient per day. In an emergency, the amount of water available might be reduced to 10 gal. or less. The dietary department must, therefore, know how to prepare and cook foods and clean utensils with a minimum amount of water.

The probable need for water conservation is one of several reasons why simplicity should be the guiding principle in serving food as well as in its production. Normal tray service would be suspended. Food would be taken in bulk to the various stations and served in paper drinking cups and dishes. Paper should be used for all food service whenever possible because it will eliminate dishwashing, cut down the work load, and contribute to sanitation.

Service to all hospital staff should be cafeteria style and if a temporary set-up is necessary, provision should be made for counters, tables, benches, stools, and chairs in sufficient quantities. Meal hours for both patients and staff will be staggered to serve the additional load as quickly as possible, and it may be necessary to serve continuously throughout the day.

The dietary staff should be augmented by volunteers recruited through the local Civil Defense Manpower Procurement Office. This method will eliminate competition between hospitals and other civil defense activities, although training would have to be planned with the local civil defense and American Red Cross. It is suggested that dietitians become authorized Red Cross canteen instructors and train the volunteers assigned to their departments.

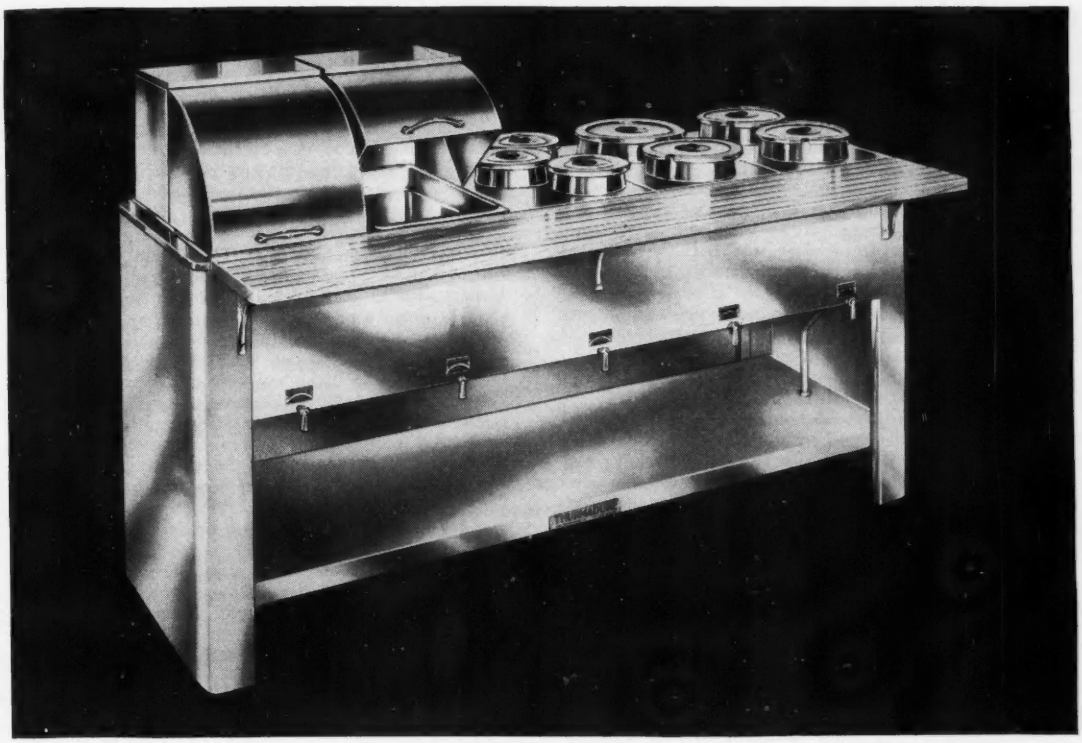
FOOD SALVAGE

All dietitians should acquaint themselves with techniques of food salvage, it was pointed out. Prompt application of proper salvage methods can reduce considerably the loss of foods from enemy action or ordinary fires, British speakers reported. They estimated that about 75 per cent of the food lost in the first attacks on Britain could have been avoided by measures later undertaken to recover damaged foods.

Actually, even in an atomic war, the principal damage is from blast and fire; radiation damage to food is now regarded as likely to be slight and temporary, and its extent and duration will depend on whether the bomb explodes in the air, on the ground, or under water; on the direction of the wind; and on other factors. Foods which have been covered or enclosed are unlikely to be dangerously affected for a long period by radioactive particles, although in opening containers of foods which may have been exposed to atomic blast, care must be taken that the contents are not infected with particles remaining on the outside of the container. Serious loss from damage by splintering glass was reported in the last war; glass splinters perforated even packaged and canned foods.

Dehydrated Potatoes of Ecuador

Ecuadorian Indians have anticipated some modern dietary ideas by many centuries. Generations ago they developed a dehydrating method which subjects potatoes to frost at night and sun in the daytime; then they are trodden into a mat-like mass. Locally the product is called "papaloza" or "chuno." Dr. Lawrence Campbell, FAO technical assistance expert, commented "I'm afraid it is rather awful stuff."



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Book Reviews

Nutrition and Climatic Stress. With Particular Reference to Man. By H. H. Mitchell and Marjorie Edman. Springfield, Ill.: Charles C Thomas, 1951. Cloth. Pp. 234. Price $6.75.

The ability of the human body to maintain constant temperature and metabolic equilibrium under widely different environments of temperature and atmospheric pressure has long been a marvel to physiologists. With development of high-altitude flying, the adaptive powers of man have been called upon to withstand greater stresses than ever before. This monograph reviews critically the experiments and observations dealing directly with the relationships of nutrition and climatic stress. The subject is particularly important for the proper rationing of aviation personnel and of units in tropical and arctic climates.

The authors discuss in some detail how mental and muscular work may be disturbed by extremes of temperature and atmospheric pressure. Indirectly, principles learned through experiments conducted under such extremes contribute to the general science of nutrition. For instance, the advantages of high-carbohydrate diets in high altitudes have been substantiated by various workers using different criteria which serve to substantiate or refute physiologic principles. Acceptability as well as nutritional value is important if food offered is really to function. Factors affecting food preferences under extremes of climate are also considered.

This monograph should be useful as a reference for research workers and advanced students interested in this field as well as to those in charge of planning rations for flight crews and other special groups. The book is not written for popular consumption but application of the principles may have vital and practical significance.—*Helen S. Mitchell, Ph.D., Dean of Home Economics, University of Massachusetts, Amherst.*

The World's Favorite Recipes—Over 100 Tested Dishes from the United Nations. Edited by American Home Economics Association. New York: Harper & Brothers, 1951. Paper. Pp. 59. Price $1.

The World's Favorite Recipes is a compilation of recipes from delegates to the United Nations. Members of the American Home Economics Association have tested and edited the recipes to make them usable by cooks in the United States.

Fascinating dishes from all nations may be served in homes and institutions all over our country. As Eleanor Roosevelt says in the preface, "To take dishes from every country in the world into our kitchens is, in itself, one of the ways to bring about better international understanding."

Here you will find the Polish kolachky, real Swedish limpa (rye bread), Shashlik from Russia, steak and kidney pie, pilaf, Peruvian chicken, Indian curried chicken, national plate (the rice and beans from Haiti that is typical through all the Caribbean area), sweet and sour pork, and many other delicious dishes you will want to try.—*Virginia Monahan Bayles, Department of Home Economics, University of Colorado, Boulder.*

Quantity Cooking—Basic Skills. By Sidney Aptekar. Albany, New York: Bureau of Vocational Curriculum Development and Industrial Teacher Training, The State Education Department, The University of the State of New York, 1951. Paper, spiral bound. Pp. 153. Price $1.95.

This manual is one of a series designed to aid vocational school teachers in setting up courses to prepare individuals to enter the food trades. It is written in simple language and covers simple operations in cooking with water, dry heat and fat, stewing and braising, sauces and soups.

The only example of vegetable cookery, other than potatoes, is boiling green peas. The author recommends the use of baking soda to preserve the green color, citing a Department of Agriculture report as his basis. In that study the only green vegetable used was peas, and the authors stated that general recommendations for the use of soda could not be made until studies were done on different vegetables using water from different localities.

Some of the other recommended practices are open to question. Among these are starting potatoes in jackets in cold water, plunging sticky or slimy beef into boiling water to remove impurities and off-flavors, overnight soaking of ham, poaching eggs in water to which vinegar has been added, draining off the first water which has been brought to a boil in the stock pot, and using a teacup to portion hamburger and codfish cakes.

This manual would not replace the standard textbooks long in use in institution management classes.—*Wintress Dalbey Murray, Nutrition Director, Eastman Kodak Company, Rochester, New York.*

Martha Logan's Meat Cookbook. By Beth Baily McLean and Thora Campbell. New York: Pocket Books, Inc., 1952. Paper. Pp. 440. Price 25 cents.

Here is an authoritative book to help homemakers get the most out of their meat dollar. Prepared by the Director and Assistant Director of the Swift & Company test kitchens, it contains basic information on buying, storing, preparing, cooking, and serving of all types of meats—both fancy and economical cuts. There are illustrations of carving and numerous suggestions for the use of leftovers. Illustrations of the different cuts, together with tables giving information on cooking temperatures for each cut, make the book most practical. Being available in the 25-cent Pocket Book style at the corner newsstand or drugstore should give it wide distribution, putting in many homes of the nation a truly usable handbook on meat for the kitchen.

RECENT BOOKS RECEIVED

Table of Food Values Recommended for Use in Canada. 2nd ed. By the Nutrition Division, Canadian Department of National Health and Welfare. Ottawa: Department of Public Printing and Stationery, 1951. Paper, spiral bound. Pp. 286. Price $1.

Reduce and *Stay* Reduced. By Norman Jolliffe, M.D. New York: Simon and Schuster, 1952. Cloth. Pp. 235. Price $2.95.

The Home Garden Book of Herbs & Spices. By Milo Miloradovich. Garden City, N. Y.: Doubleday & Company, Inc., 1952. Cloth. Pp. 236. Price $2.95.

Electric Blender Recipes. By Mabel Stegner. New York: M. Barrows and Company, Inc., 1952. Cloth. Pp. 226. Price $3.00.

The House of Chan Cookbook. By Sou Chan. Garden City, N. Y.: Doubleday & Company, Inc., 1952. Cloth. Pp. 190. Price $2.50.

Hygiene, Infectious Diseases and Dietetics. By Dennis H. Geffen, M.D., and Susan Tracy. New York: Longmans, Green and Co., 1952. Cloth. Pp. 276. Price $1.85.

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LESSON No. 5

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Add cheese to Carnation-salt mixture. Continue to heat sauce about 1 minute or until cheese melts. Stir occasionally.

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Current Literature

Contributed by Mildred Bonnell and administrative interns, University of Washington, Seattle; Minnie Brandt, Chicago; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Henriette Dickinson, University of Chicago Clinics; Pauline Kegereis, The Children's Mercy Hospital, Kansas City, Missouri; Marjorie O'Brien, Franklin Boulevard Community Hospital, Chicago; Elizabeth H. Tuft, Wesley Memorial Hospital, Chicago; and the Journal staff

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 19, March, 1952

* Modern concepts of the physiopathology of diabetes mellitus. J. H. Barach.—p. 61.

Modern Concepts of Diabetes. The available facts in our knowledge of diabetes, both experimental and clinical, point clearly to hormonal imbalance between the pancreas, pituitary, adrenals, and thyroid. Whatever alters the smooth and normal functioning of the pancreatic hormone disturbs sugar production and utilization primarily and protein and fat metabolism secondarily at the various intermediary stages. Whatever the resulting nutritional disturbances may be, they are fortunately, in a large measure, corrected by insulin. Certain fundamental questions still must be answered, particularly those pertaining to intermediate metabolism. However, increasing knowledge concerning the hexokinase reaction, phosphorylation, and the part played by pyruvic acid seems to presage a more complete understanding of this disease.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 83, March, 1952

* Egg allergy in children. Incidence and evaluation in relation to chick-embryo-propagated vaccines. B. Ratner and S. Untracht.—p. 309.

Egg Allergy. A large number of infants show reactions to egg. Since an inordinately high number of eczema cases fall into the younger age group, and asthma is more prevalent in older children, egg reactivity seems to be associated more with eczema than with asthma. Often egg reaction in infancy goes back to intrauterine sensitivity where there was a history of excessive ingestion of one or more foods by the pregnant mother. A diagnosis of egg sensitivity cannot be made on the basis of the skin test alone; a positive skin reaction to egg may show a limited tolerance for egg, a clinical intolerance for egg, or a residual skin reaction in a person who has overcome his clinical intolerance.

THE AMERICAN JOURNAL OF NURSING

Vol. 52, April, 1952

* Enrichment of cereals. R. R. Williams.—p. 447.

Enrichment of Cereals. White flour, white rice, and corn meal are the world's most used foods, and since they are cheap their use increases with the poverty of the consumer. However, corn is dangerously low in niacin and unenriched white flour and rice are low in all vitamins. Leaving the rice and flour brown would seem to solve some problems; however, this would not be practical for people in cities whose food is delayed, because rancidity and infestation creep into brown cereals faster. Therefore, the enrichment program was introduced in the U. S. in 1941, and by now about 80 per cent of the white bread and flour consumed here is enriched. Corn enrichment has been less successful. Rice enrichment was not feasible until vitamins became less expensive. The process of enriching rice is described, and the success of the program in Bataan discussed. China and Japan are much in need of rice enrichment, but the parboiling of rice in India leaves most of the nutrients in usable form.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 42, March, 1952

* The place of nutrition in the health education program. J. I. Rowntree.—p. 293.

Vol. 42, April, 1952

* Principles of emergency feeding for a large metropolitan area in catastrophe. R. S. Goodhart and N. Jolliffe.—p. 373.
* Special foods for emergency situations. E. M. Mrak.—p. 379.

Nutrition in Health Education. Linking good nutrition with the building of a better world, Dr. Rowntree presents the need for nutrition education and discusses methods by which the subject may be taught even at the elementary level. The teaching of nutrition should never be didactic, she points out, because new information is constantly being acquired. The Recommended Dietary Allowances change as research continues. Requirements vary with individuals. Broad avenues of related knowledge cannot be fully appreciated without an understanding of agriculture, marketing, processing, public health measures, pure food laws, and economics as well as the selection and preparation of daily food.

Emergency Feeding. In case of partial destruction of an urban area by enemy action, the primary purpose of an emergency feeding program for the uninjured population would be the maintenance of morale and avoidance of panic. Because emergency feeding would be of short duration, nutritional adequacy is of secondary importance. However, the program must be designed to meet the needs of special groups, such as children, the sick, and essential workers, and it consists of more than menu planning and meeting nutritional requirements. Expert administration is essential; problems of food storage and supply, food preparation, service, transportation, sanitation, decontamination, and fuel and water supply must be met. Standard nutritional requirements as recommended by the Advisory Committee to the Emergency Food Authority of New York City Office of Civil Defense are discussed.

Special Foods for Emergencies. This is a purely speculative problem and, as such, is difficult to study, since information is not available about type of emergency or its possible effect on food supply. Some of the ramifications to be considered are water supply, role of stress on individuals, nutritional values and acceptability of obtainable foods, and the effects of processing and storage on food. Breads, soups, beans, and potatoes are most generally accepted as satisfactory in disaster feeding. Less successful has been the search for suitable processing of animal proteins, the most palatably treated of which are, at present, certain cheese products and eggs. Various possibilities for the preservation of fruits, vegetables, and fruit juices are discussed, and forms of beverages, seasonings, and desserts for emergency use are mentioned.

ANNALS OF INTERNAL MEDICINE

Vol. 36, January, 1952

* Food allergy with special reference to corn and refined corn derivatives. H. S. Bernton.—p. 177.

Vol. 36, February, 1952, Part 2

* The oral administration of vitamin B_{12} in tropical sprue. F. Diéz R., R. M. Suárez, F. Hernández M., and E. Pérez S.—p. 583.

Allergy to Corn and Corn Derivatives. The ingestion test furnishes a reliable means of diagnosing food allergy. To insure reliability of this test, psychic factors must be minimized. Incidence of sensitivity to corn meal is very low, and sensitivity to cornstarch is rare, even among patients extremely sensitive to corn meal. Sensitiveness to other corn products—corn sugar, corn sirup, and corn oil—has not been demonstrated by adequately controlled ingestion tests.

Vitamin B_{12} in Tropical Sprue. Vitamin B_{12} given by mouth has a definite but limited hematopoietic activity in

BAKED RAISIN CUSTARD

Makes 50 servings (app. ½ cup each)

	Weight	Measure
Sun Maid Seedless Raisins	1½ pounds	30
Eggs, slightly beaten	1 pound, 4 ounces	2½ cups
Sugar		1 tablespoon
Salt		5 quarts
Milk		2 tablespoons plus 1 teaspoon
Vanilla		

1. Heat oven to 325° F. (moderate).
2. Place approximately 1 tablespoon of raisins in each #906-S (6 oz.) Lily Casserole Container.
3. Combine eggs, sugar, and salt. Add milk and vanilla. Pour over raisins.
4. Use two large flat pans; put custard cups in the top pan and immerse that pan in second (double boiler style) and bake at 325° F. for 40 minutes or until a silver knife when inserted comes out clean.

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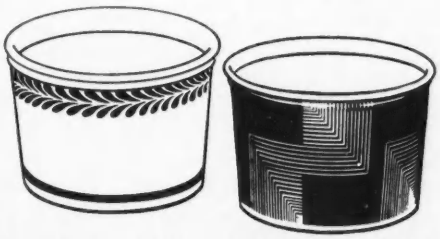

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sprue. Daily oral administration of folic acid or daily intramuscular injections of vitamin B_{12} have been found to be more effective than oral doses of vitamin B_{12}, either alone or mixed with gastric juice. The potentiating hematopoietic action of gastric juice on orally administered vitamin B_{12} in tropical sprue seems to be inferior to the results obtained with pernicious anemia. This may be due to the difference in the source of the vitamin B_{12} or to decreased absorption of the vitamin.

ARCHIVES OF INTERNAL MEDICINE

Vol. 89, January, 1952

* Problems of cation-exchange-resin therapy. I. S. Friedman.—p. 99.

Vol. 89, February, 1952

* Electrolyte metabolism during rice diet. I. Serum electrolytes in hypertensive patients without evidence of advanced renal involvement. E. Peschel and R. Lohmann-Peschel.—p. 234.

Cation-Exchange-Resin Therapy. The use of cation-exchange resins may result in disturbances of the acid-base balance of the body and the loss of essential cations and other necessary substances. Hyperchloremia, acidosis, elevation of blood urea nitrogen, and less frequently, hypopotassemia and hypocalcemia, occur. All patients, particularly those with renal involvement, require careful supervision and blood electrolyte determinations during exchange-resin therapy.

Electrolyte Metabolism During Rice Diet. A survey of the serum electrolyte pattern of patients on the strict rice diet is reported for eighty patients with hypertensive vascular disease without gross evidence of renal involvement. A moderate drop in chloride and an increase in bicarbonate occurred, both developing during the first weeks of treatment. Sodium, potassium, and total ionic concentrations were essentially maintained. The metabolic state was that of a compensated metabolic alkalosis. It is concluded that the strict rice diet can be given without danger of serum electrolyte disturbance to all patients with cardiac decompensation and 95 per cent of those with good renal regulation.

DIABETES

Vol. 1, January-February, 1952

* Serum and urinary proteins in diabetic glomerulosclerosis. Results of electrophoretic analysis H. Rifkin and M. L. Petermann.—p. 28.
* Controlled versus free diet management of diabetes. J. L. Wilson, H. F. Root, and A. Marble.—p. 33.

Diabetic Glomerulosclerosis. Electrophoretic patterns of sera and urines from patients with diabetic glomerulosclerosis showed marked increase in the alpha-2 fraction in the sera. Since in diabetes mellitus, uncomplicated by the specific renal lesion, the alpha-2 globulin is within normal limits, the study presented here suggests that determination of the alpha-2 globulin may prove of value in diagnosing diabetic intercapillary glomerulosclerosis.

Controlled Diet in Diabetes. In a study to determine the value of a controlled diet in diabetes, over three hundred youthful patients with diabetes of over ten years' duration were observed. The correlation between the degree of control and the incidence and severity of degenerative vascular complications seems to indicate that attention to control should begin early with aggressive treatment being maintained. Agreement with the findings is general in the discussion which follows the report, although it is pointed out that control is relative and that ideal control is practically nonexistent.

FOOD RESEARCH

Vol. 17, January-February, 1952

* The effect of particle size on the nutritional characteristics of Unifine flour. M. C. Stevens, J. F. Sieburth, T. Wahl, and B. McLaren.—p. 74.

Effect of Particle Size on Unifine Flour. The development of an experimental high-speed rotary flour mill has made possible the grinding of the entire berry. The flour, named "Unifine," has been ground to a fineness and uniformity of high degree as compared with whole wheat flour milled by the roller process. It contains not only endosperm, but also wheat germ, the aleurone layer, and bran. The proteins of the latter components are composed of a different mixture of amino acids from that of endosperm and have higher biologic value. When assayed for growth and protein efficiency in rats on a 10 per cent level of protein, Unifine flour was not as good as egg powder and casein and not as poor as white and whole wheat flours. Digestibility was lower than on commercial whole wheat flour. Among the flours of varying degrees of fineness there was no appreciable difference in the availability of thiamine, which was assayed as an indicator of availability of the B vitamins.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 148, March 15, 1952

"Krebiozen" in treatment of cancer. Comparison with other therapy as determined by enzyme analysis. H. A. Szujewski.—p. 929.

Suicide attempt with warfarin, a bishydroxycoumarin-like rodenticide. R. W. Holmes and J. Love.—p. 935.

* Milk from cows given Brucella vaccine. Queries and Minor Notes.—p. 977.

Vol. 148, March 22, 1952

* Mineral and protein metabolism in osteolytic metastases. D. Laszlo, C. A. Schulman, J. Bellin, E. D. Gottesman, and A. Schilling.—p. 1027.

Sodium content of commercial spices. C. A. Elvehjem and C. H. Burns.—p. 1033.

* Treatment of chronic nephritis. Queries and Minor Notes.—p. 1070.
* Low salt diet and hypertension. Queries and Minor Notes.—p. 1072.

Allergy. Queries and Minor Notes.—p. 1072.

Vol. 148, March 29, 1952

* The gastrointestinal tract in the aged. S. A. Portis and J. C. King.—p. 1073.
* Use and abuse of milk in the diet of children. Editorials and Comments.—p. 1126.
* Potassium and protein synthesis. Editorials and Comments.—p. 1127.
* Feeding hormones to animals to increase supply of meat. Queries and Minor Notes.—p. 1165.
* Hypertension in a salt miner. Queries and Minor Notes.—p. 1166.
* Gum chewing and dental caries. Queries and Minor Notes.—p. 1167.

Vol. 148, April 5, 1952

Early diagnosis of diabetes mellitus. M. H. Reinberg, P. O. Greeley, and M. S. Littlefield.—p. 1177.

* Relation of vitamin D milk to incidence of rickets. Editorials and Comments.—p. 1227.

Vol. 148, April 12, 1952

Poisoning from accidental ingestion of medicinal iron. Editorials and Comments.—p. 1280.

Brucella Vaccine and Milk. A physician asks about the possibility of human beings contracting brucellosis by drinking milk from cows which have been vaccinated with (live bacteria) vaccine. Though there is no evidence that human beings have contracted brucellosis in this manner, it is stated that proper pasteurization of such milk is the only protection to the consumer.

Mineral and Protein Metabolism in Osteolytic Metastases. The report discusses metabolic findings on patients with diseases involving the skeletal system. The purpose of such research is to aid in diagnosing disease and evaluating the effect of therapy.

Chronic Nephritis. A summary of the latest medical and dietary methods of treatment is outlined. A diet adequate in calories, low in protein, phosphate, and amine, with neutral or slightly alkaline content is recommended. The diet is discussed in some detail.

Low Salt and Hypertension. A physician asks about the use of an occasional dose of "Sal Hepatica" and other waters containing sodium for a patient with hypertensive heart disease. The answer indicated that sodium need not be so strictly controlled in the treatment of congestive heart failure, but the restriction should be severe when attempting to reduce blood pressure and so spare the heart.

Gastrointestinal Tract in the Aged. The authors review treatment of 133 ambulatory patients over sixty. The diets recommended were planned to normalize the pathologic function.

Milk in the Diet of Children. Somewhere between a pint and a quart of milk a day is recommended for normal growing children. Emphasis is placed on the fact that milk must be accompanied by a variety of good foods essential to good nutrition.

Potassium and Protein Synthesis. Recent investigations have pointed up the fact that a number of inorganic salts need to accompany the essential amino acids in building protein. It is concluded that parenteral feedings (containing amino acids and carbohydrate) may need to be reexamined and changed.

Hormones and the Meat Supply. A physician wants to know if the feeding of hormones to meat animals might explain the recently increased number of relatively low metabolic rates in patients. In answer, no great numbers of people could have been exposed to the meat of hormone-treated animals, since such practice has been used for experimental purposes only. Mention is made

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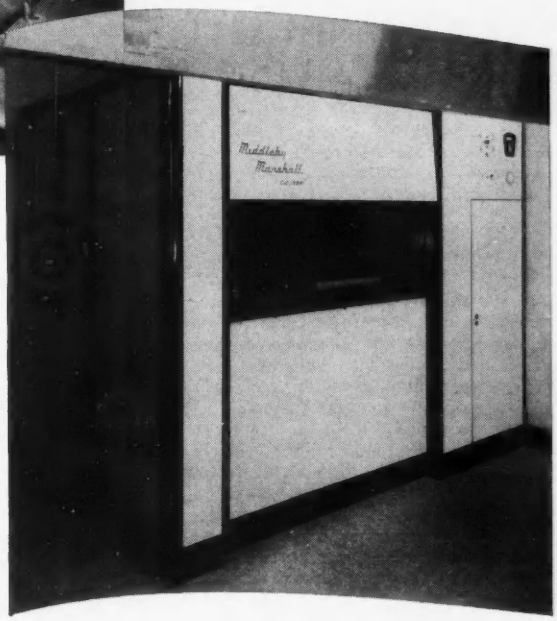

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of the exception wherein poultry has been treated with diethylstilbestrol.

Hypertension in a Salt Miner. Unless a diet contains less than 200 mg. sodium, it cannot be effective. Because a salt miner inhales salt, it is thought that a low-salt diet would not accomplish good results.

Gum and Dental Caries. Experimental studies have shown that fermentable sugar in the saliva (normally about 20 mg. per 100 ml.) rose to 725 mg. per 100 ml. after 5 min. of chewing. It took 30 min. for the normal level to be restored. Further experiments showed that gum chewing was associated with a great increase in the salivary Lactobacillus count.

Vitamin D Milk. Reviewing the high incidence of rickets in the nineteen-twenties and the very low incidence at present, credit is given for the decrease to the fortification of milk with vitamin D. This procedure of adding vitamin D to milk is regarded as a most successful public health measure.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 195, March, 1952

* Effect of low fat and high fat diets on the synthesis of cholesterol in rats. R. B. Alfin-Slater, M. C. Schotz, F. Shimoda, and H. J. Deuel, Jr.—p. 311.

* The effect of diet on the rate of loss of labeled amino acid from tissue proteins. G. Solomon and H. Tarver.—p. 447.

The measurement of thiamine in urine. O. A. Bessey, O. H. Lowry, and E. B. Davis.—p. 453.

Effect of Low-Fat and High-Fat Diets. Because contradictory results have been reported on the effect of ingested fat to cholesterol synthesis and deposition, this study of the cholesterol content in liver and plasma was made. Deuterium was introduced into the cholesterol under various dietary conditions and its uptake into the cholesterol was measured. Female albino rats were used under controlled conditions. Findings indicate that the amount of newly formed cholesterol in the liver and plasma of rats pre-fed a low-fat diet is unchanged when the animal is placed on a high-fat diet. Synthesis of cholesterol in the liver became normal sooner in the livers of animals on high-fat diets than in those given low-fat feedings, while the newly formed cholesterol in the plasma of rats pre-fed a high-cholesterol diet was much lower than that of the control animals. A high-fat diet seems to be more efficient in removing the cholesterol accumulated in the liver during pre-experimental cholesterol feedings.

Loss of Labeled Amino Acid. Experiments were made to test the hypothesis that if labile protein in tissues is built up and torn down at a greater rate than stable protein in the same tissues, the apparent turnover rate of the protein depends largely on the dietary state of the animal. Rats were placed on diets differing widely in their protein content and tissue proteins were labeled by administering methionine-S^{35}. The animals were sacrificed at various intervals thereafter, and the rate of loss of the labeled methionine from the proteins of different tissues was determined. As a control, extra methionine was fed to some animals, but this had little effect on increasing the rate of protein loss. The results indicate that rate of loss of label from the proteins of liver, kidney, and plasma is greatly influenced by the protein in the diet, and that the tissues which lose the label rapidly are those known to have large stores of labile protein.

THE JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol. 13, March, 1952

* Nutrient content of vegetables. M. E. Thomson.—p. 11.

Nutrient Content of Vegetables. Environmental factors influencing the nutrient content of a kind or variety of vegetable are discussed. These factors include: type of soil used for growing; climatic factors such as temperature, sunlight, or humidity; variety; maturity of vegetable tissue; and distribution of the nutrients within the vegetable itself.

JOURNAL OF HOME ECONOMICS

Vol. 44, April, 1952

* Factors in choice of home economics. E. H. Wright and F. Corbin.—p. 263.

* Ascorbic acid contents of frozen orange concentrates as purchased on retail markets. E. E. Anderson and I. S. Fagerson.—p. 276.

Choosing Home Economics. Factors influencing students to enroll in home economics departments were studied in a survey of seven Nebraska colleges and universities. Information from nearly two hundred freshmen and transfer students was received concerning personal data, persons and activities influencing students, and degrees of interest in home economics. Personal statistics indicated that 96 per cent of the students were under twenty years of age and, therefore, had enrolled in college immediately after graduation from high school. Approximately 30 per cent of the students became interested in home economics before reaching high school; 60 per cent during high school; and 10 per cent after graduation. This shows the fallacy of slanting recruiting programs only to high school seniors. However, 50 per cent made their final decisions to enter college during their senior year of high school; therefore, some especially vital type of recruitment is evidently needed then. Eighty-four per cent of the college home economics students came from high schools which offered a homemaking course. Mothers ranked first in influencing students to enroll in home economics; homemaking teachers ran second but were far below. Activities influencing students were: enthusiasm of fellow college students; helping with homemaking in their own homes; outside work in hospitals, stores, and others' homes; books and magazines; the 4-H Club; scholarships; and "hospitality days" at colleges. Leading the fields the girls expected to enter after graduation were: first, teaching; second, homemaking; and third, dietetics.

Ascorbic Acid in Orange Concentrates. Ascorbic acid contents of twenty popular brands of frozen orange concentrate were studied at the University of Massachusetts. The amount of reduced ascorbic acid varied from 30.3 to 49.6 mg. per 100 ml. within a single brand. The overall range for the twenty brands was 28.7 to 51.5 mg. per 100 ml. However, a 4-oz. glass of any brand would provide an adult with more than 30 mg. ascorbic acid (the Food and Drug Administration's minimum daily requirement). From 5 oz. of the highest-value brand to 9½ oz. of the lowest would provide the National Research Council's 70- to 75-mg. minimum daily allowance for adults.

THE JOURNAL OF NUTRITION

Vol. 46, March, 1952

* Dental caries in the cotton rat. XIII. The effect of whole grain and processed cereals on dental caries production. M. A. Constant, P. H. Phillips, and C. A. Elvehjem.—p. 271.

* The effect of vitamin B_{12} deficiency upon the survival of young born to rats fed purified casein rations. L. P. Dryden, A. M. Hartman, and C. A. Cary.—p. 281.

* Studies on amino acids in self-selected diets. M. F. Futrell, R. N. Lutz, M. S. Reynolds, and C. A. Baumann.—p. 299.

* Essential amino acids in self-selected diets of older women. E. T. Mertz, E. J. Baxter, L. E. Jackson, C. E. Roderuck, and A. Weis.—p. 313.

* Metabolism of nicotinic acid in pregnancy. M. E. Lojkin, A. W. Wertz, and C. G. Dietz.—p. 335.

* The relative utilization of alpha-tocopherol and alpha-tocopheryl acetate by humans. E. F. Week, F. J. Sevigne, and M. E. Ellis.—p. 353.

* Cariogenicity of sugar-containing diets. J. Haldi and W. Wynn.—p. 425.

Dental Caries in the Cotton Rat. The effect of whole grain versus processed cereals and alkaline-ash versus acid-ash foods on the experimental production of dental caries in the cotton rat have been studied. When fed under similar conditions, the whole-grain cereals—corn, wheat, and oats—were found to be less cariogenic than their processed counterparts—cornflakes, wheat flakes, and oatmeal, respectively. Natural diets which contained processed cereals and only 30 per cent sugar were found to be more cariogenic than a synthetic diet containing 67 per cent sucrose. The reasons for this rather unexpected finding have been discussed. A significant difference was not found between the cariogenicity of alkaline-ash and that of acid-ash foods.

Effects of Vitamin B_{12} Deficiency. A vitamin B_{12} deficiency in the diet of gestating rats has been reported to result in early deaths of the newborn young and a low rate of survival from birth to weaning. A number of experiments testing various theories in this regard were made, using B_{12}-deficient rations, both yeast-free and yeast-containing. Survival was poor in connection with the yeast-free, B_{12}-deficient diets, but the yeast-containing rations often produced better survival records. The factors producing this result are not known. Deaths were evidently not due to a failure of the B_{12}-deficient mothers to lactate, nor was their food consumption during gestation impaired. Descendants from only three mothers survived through every gestation observed. Re-

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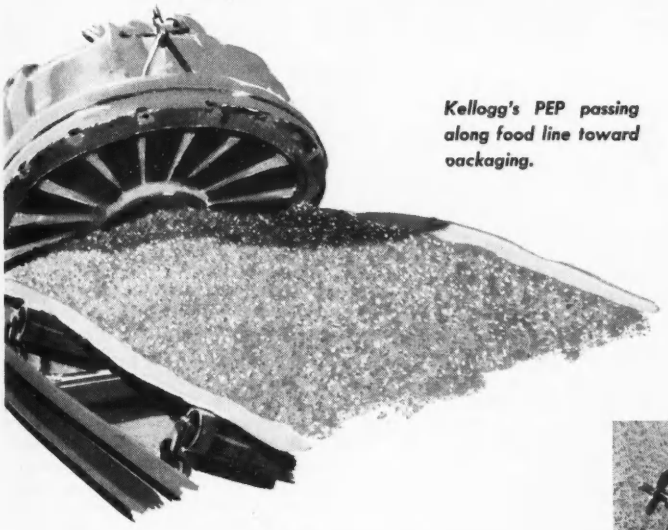

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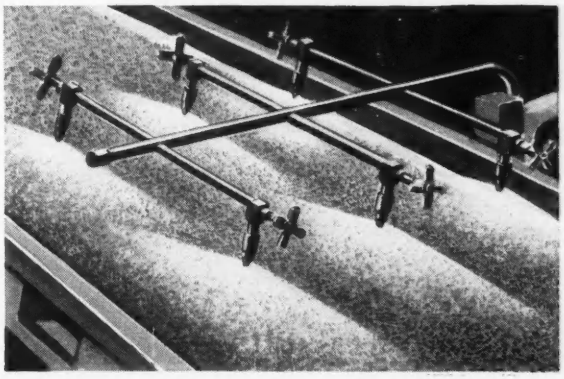

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sults seem to suggest that early deaths may be partially due to factors other than the existence of a B_{12} deficiency, even though the condition may be largely prevented or corrected by feedings or injections of crystalline vitamin B_{12}.

Amino Acids in Diets. Ten essential amino acids were determined microbiologically in the self-selected diets of four women. Determinations were made both on a composite sample and on separate groups of foods. The total intake of amino acids always appeared to be greater when determined on separate foods than on composites. The greatest discrepancies were found with lysine, methionine, and tryptophan, with intermediate losses observed for histidine, threonine, phenylalanine, and arginine. Values of leucine, isoleucine, and valine were similar whether made on the separate foods or on the composites. Satisfactory recoveries of bound and free amino acids were found in all cases in the presence of high-protein foods, but in the presence of carbohydrate-rich foods, the losses varied. The amounts of most of the essential amino acids consumed by the subjects were significantly higher than the levels recommended by Rose. Methionine, however, appeared to be limiting. Negative nitrogen balance seemed to be related to total protein intake and also to the distribution of protein in meals.

Amino Acids in Diets of Older Women. Using microbiologic methods, the average daily intakes of seven essential amino acids were determined for eighteen older women on self-selected diets. The levels of intake of isoleucine, leucine, lysine, threonine, and valine usually equalled or exceeded the recommended levels of Rose, whereas phenylalanine was intermediate. Methionine intake seldom reached the recommended levels and in many cases was below the minimum level. Methionine appeared to be the first limiting essential amino acid in the self-selected diets studied.

Niacin Metabolism in Pregnancy. A study was made of the metabolism of niacin in twenty-three primiparae and thirty-eight multiparae during two periods of pregnancy and one post-partum period. There was a marked increase in the urinary excretion of N^1-methylnicotinamide. The levels of excretion of this metabolite rose significantly as pregnancy progressed and remained above non-pregnancy levels for some time after parturition. There was a less marked but statistically significant increase in the excretion of niacin in pregnancy although excretion levels did not increase as pregnancy advanced. Similar trends were also observed when the above findings were expressed as percentages of niacin intake. Under the conditions of these experiments, there was no correlation between the excretion of N^1-methylnicotinamide and niacin and the intakes of niacin, tryptophan, and total protein. The total excretions of niacin and N^1-methylnicotinamide, and the 6-pyridone of N^1-methylnicotinamide often exceeded the sum of niacin ingested and the niacin available from the tryptophan consumed.

Vitamin E Utilization in Man. Equivalent, high-level dosages of *dl*-alpha-tocopherol and *dl*-alpha-tocopheryl acetate were given at suitable intervals to twenty subjects. Blood samples were assayed for tocopherol content. The relative utilization of the two forms was determined. The utilization of the free alpha-tocopherol was found to be significantly (5 per cent level) superior to that of the alpha-tocopheryl ester. The mean value for the free form was 35 per cent greater than the mean value for the ester.

Sugar-Containing Diets and Caries. The number and extent of carious lesions in the teeth of albino rats of the Wistar strain on a high-protein and a high-fat diet containing 22 to 24 per cent sugar were extremely small and of the same order of magnitude as in animals fed an ordinary stock diet. Increasing the sugar content of the diet so that it constituted 64 per cent of the food mixture resulted in some increase in the carious damage; the actual number and the extent of the lesions, however, were relatively small. Exposure of the animals to the possible systemic influence of a high-sucrose diet in prenatal life did not increase the incidence of dental caries.

JOURNAL OF PEDIATRICS

Vol. 40, March, 1952

* Experimental glutamic acid treatment in mentally retarded children. V. Oldfelt.—p. 316.

Glutamic Acid for Retarded Children. In a children's home in Sweden, *l* (+) glutamic acid was administered to a series of sixteen children between the ages of seven and fifteen years, with intelligence quotients ranging from 42 to 77. The dosage was 18 gm. per day in three doses; duration of treatment was just over four months. A control group of fifteen children of corresponding ages and intelligence was treated concurrently with a granulated substitute. The treatment had no demonstrable effect.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 246, February 28, 1952

* Coronary thrombosis in diabetes mellitus. An analysis of 54 cases. J. W. Robinson.—p. 332.

Vol. 246, March 27, 1952

* The influence of carbonated water on gastric emptying. G. Lolli, L. A. Greenberg, and D. Lester.—p. 490.

Coronary Thrombosis in Diabetes Mellitus. Data are presented in an analysis of fifty-four cases of coronary thrombosis occurring in diabetic patients. If the admissions to the Pennsylvania Hospital are a sample of the general population, the data suggest that approximately one woman in five with coronary thrombosis is a diabetic and that a diabetic woman is fourteen times as likely as a non-diabetic woman to suffer coronary thrombosis.

Gastric Evacuation and Carbonated Water. In these experiments, carbonated water markedly hastened gastric evacuation in the majority of instances. The volume of either water or carbonated water taken with the barium-farina meal appears to cause little difference in emptying time. It is more likely that marked differences would depend mainly on the volume of the solid test meal.

NUTRITION REVIEWS

Vol. 10, March, 1952

* Trace elements in biochemistry and nutrition. B. L. Vallee.—p. 65.
* Heat treatment and protein quality.—p. 68.
* The relation of body fluid compartments to body fat.—p. 70.
* Fluoride and caries in adults.-p. 74.
* Mechanism of fluoride action.—p. 76.
* Dietary treatment of liver cirrhosis.—p. 79.
* A newer plan for weight control.—p. 81.
* Animal versus vegetable foods in nutrition.—p. 87.
* Liver fat and antibiotic therapy.—p. 89.

Vol. 10, April, 1952

* Calcium in the chemistry of foods and nutrition. H. C. Sherman.—p. 97.
* Individual essential amino acids in plasma and urine of surgical patients.—p. 99.
Increasing ascorbic acid content of vegetables and fruits.—p. 103.
* Corn treatment and pellagra.—p. 105.
* Antibiotics and B-vitamin requirements.—p. 107.
* Management of overweight.—p. 109.
Pernicious anemia in childhood.—p. 113.
* The antibacterial factor of milk.—p. 118.
Bone density.—p. 119.

Trace Elements. These are a group of elements occurring in biologic systems in such small concentrations that they have usually been found qualitatively but not measured quantitatively. The effectiveness of metals in such minute quantities, their interaction with enzymes, and the profound metabolic changes resulting from deficiency, intoxication, and imbalance all suggest an analogy to the vitamins. Though such reasoning by analogy is not convincing, the recent identification of cobalt as an integral part of vitamin B_{12} has provided a link between the metals and the vitamins. The effects of metals in living systems seem subtle indeed. They may have eluded the investigator because his *mode* of observation has been inappropriate, not because his observational powers have been inadequately used. New avenues of approach will undoubtedly lead to better understanding of the trace elements and their function.

Heat Treatment and Protein Quality. Since many foods are processed by heat treatment, the extent to which the browning, or Maillard reaction can influence the nutritive value of the product is of great importance. Recently the influence of heat treatment on casein in the presence of dextrose was studied. Processing for 3 min. at 15 lb. pressure reduced the protein efficiency by about 25 per cent. Similar processing for 15 min. resulted in such severe damage that the experimental rats lost weight. Whether the decrease in nutritive value for the rat was due to a decrease in digestibility was not determined. Other studies indicate that the *in vivo* digestibility for dogs is markedly decreased when lactalbumin is heated with lactose, although the nitrogen absorbed from heated protein was as well utilized as that from unheated protein. These results could not have been expected if one or more of the essential amino acids had been exten-

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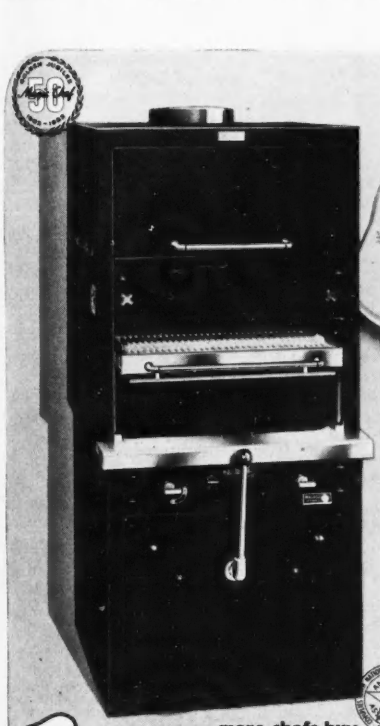

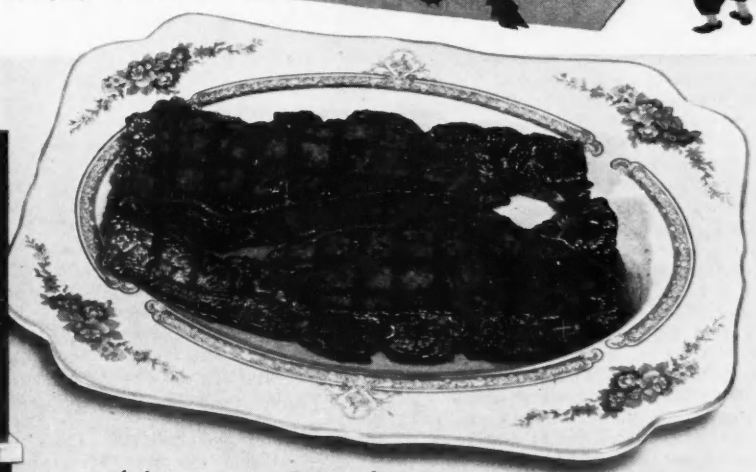

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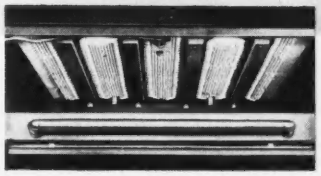


EVEN HEAT OVER ENTIRE GRID SURFACE

Two section, twin control burners fire radiants above grids, flooding entire area with clean, even heat.

sively destroyed. These apparently conflicting results may have as their basis the difference in behavior of lactalbumin and casein in the Maillard reaction.

Body Fluid Related to Body Fat. A lack of close correlation between plasma volume and body weight has long been recognized as has a similar condition between total body water and body fat. Observations of eight healthy, adult males of various stature were made for the purpose of finding a guide in estimating "normal" blood volume. Total body water was measured with deuterium oxide, extracellular fluid with sodium thiocyanate, and plasma with the dye T-1824. The ratio of thiocyanate space to body water was shown to be greater in obese subjects while the indication seems to be that plasma volume, like total body water, is proportional to the lean body mass and inversely proportional to body fat.

Natural Fluoride in Water Supplies. Adults living in Colorado Springs using fluoride-containing water and adults from nearby Boulder using fluoride-free water were studied. The two groups appear comparable in every respect except for their water supply. The data support the conclusion that the cariostatic effect of fluoride-containing water is exerted in adults as well as in children.

Fluoride and Dental Caries. Preliminary reports from the Newburgh-Kingston study on the artificial fluoridation of communal water supplies strongly suggest that this procedure has a similar effect on caries incidence to that seen in regions of natural fluoride waters.

Dietary Treatment of Liver Cirrhosis. Liver cirrhosis is a dynamic disease and reversible under favorable treatment. One study demonstrated that early liver cirrhosis can be cured with a diet of 200 gm. protein, 500 gm. carbohydrate, 150 gm. fat, moderate vitamin supplement, and ½ oz. brewers' yeast three times daily. Additional methionine or liver extract did not appear to have any additional effect. Other studies demonstrated that many cases of advanced liver cirrhosis can be stabilized, and if such patients adhere to an adequate diet, they can be returned to useful endeavors.

Group Approach to Weight Control. The use of psychotherapy on a group basis was recently reported. Because the obese person consumes more food than his body requires, it seems logical to seek the cause in nonmetabolic or psychologic causes. The group approach is being tried since diet therapy and medications have failed to control obesity on a long-term basis.

Animal vs. Vegetable Foods. Observations support the view that vegetables eaten by human beings supply a superabundance of energy but their total nutritive value for man is limited by their shortage of vitamins and essential amino acids. In dealing with the comparative merits of animal versus vegetable foods, their complementary merits must be considered.

Liver Fat and Antibiotic Therapy. Reversible fatty infiltration of the liver is a frequent result of the administration of aureomycin and terramycin in both human beings and animals. Such changes appear to be more common after large doses, particularly when given intravenously. A number of questions remain to be answered before it can be concluded that fat vacuolization so produced represents a toxic or damaging effect on the liver. This is emphasized by the fact that beneficial effects from aureomycin in patients with liver disease have been reported.

Calcium Requirements. The nutritional importance of the mineral element, calcium, is reviewed in this historical account of research relating to its effect on health and growth, its storage by the body, and the body's daily requirements. The first Recommended Dietary Allowances of the National Research Council published in 1941 provided 0.8 gm. calcium daily for the normal maintenance of either men or women regardless of muscular activity. The allowance for women was the same as for men despite their smaller size in anticipation of the extra demands of pregnancy and lactation. When the National Research Council resumed critical study of calcium requirements in 1947, it was found that the tentative *mean* had been set too low and also individual variability of calcium requirement had been inadequately appreciated. After the data were resifted, the new recommendation was placed at 1 gm. daily.

Amino Acids in Surgery. Using microbiologic techniques, the fasting plasma levels of the essential amino acids plus histidine and arginine were determined in sixty-three surgical patients, thirty-eight of whom were considered to be in poor nutritional status. The malnourished group showed a significantly lower mean total of the ten amino acids than did the well nourished patients, while the mean value of each individual acid was significantly lower in the former group. The data suggest that decrease in plasma concentrations of the ten amino acids studied may indicate malnutrition. Need is expressed for investigation of the possibility of accelerating protein synthesis by reinforcing the diet of malnourished surgical patients with amino acids.

Corn Treatment and Pellagra. The effect of processing on the various fractions of corn as it may influence tryptophan and niacin nutrition has recently received attention, and the influence of raw versus processed corn in niacin-deficient diets for the rat has been studied. Used in a study on weanling rats were diets incorporating lime-treated whole yellow corn; untreated whole yellow corn; reconstituted corn mixture from various fractions obtained in the "wet-milling" of corn; lime-treated cornstarch; and a mixture of lime-treated corn germ, gluten, and feed meal. Lime-treated corn appeared to replace completely supplementary niacin in the diet. Results with the diets of reconstituted fractions by the commercial process showed only slight advantage over the raw corn diet and did not compare favorably with diets of the lime-treated corn. Lime treatment appears to exert its niacin-sparing effects only on the nonstarch fractions of corn, and incidentally improves the calcium content of the diet when used for processing any cereal. This may explain why there is little primary pellagra in Mexico, where corn is eaten primarily in the form of *tortillas*, which involves soaking the corn in lime water prior to cooking.

Antibiotics and B-Vitamin Needs. Experiments on the growth-producing effects of antibiotics in animals appear to conflict with recent reports that the extensive use of antibiotics in human patients leads to vitamin deficiencies. Recent observations have emphasized the striking growth-stimulatory effect of the antibiotics in crude diets that are deficient in vitamin B_{12}, while aureomycin seems to have increased the growth of rats fed a diet limited in vitamin B_6. With marginal intakes of riboflavin, the addition of aureomycin and penicillin seemed to stimulate growth at a rate equal to that obtained by doubling the portions of the vitamin. This was paralleled by increased storage of the vitamin in the liver. Although this may suggest that antibiotics conserve a given vitamin for the host and that they improve the utilization of all nutrients, the study includes only limited data on the influence of the antibiotics when all known B-vitamins are fed at adequate levels.

Management of Overweight. Recommendations for weight reduction directly contrary to fundamentals of energy metabolism, as established and retested continuously since the beginning of nutritional science, have been expounded in an investigation with obese industrial employees. The recommended diet would provide some 4000 calories a day with 27 oz. lean meat and 9 oz. fat. Salt is restricted but no limitation is placed on fluids other than alcohol, which is forbidden. Bread and sugar are not allowed. The principle of a low-carbohydrate and high-protein content in reducing diets is generally accepted, but in this experiment on twenty obese individuals of unspecified age, sex, and height, who lost an average of 22 lb. in an average time of three and one-half months, the actual caloric intake was not reported. This and other data were insufficient to support arguments in favor of the program.

Antibacterial Factor in Milk. In an investigation of the anti-streptococcic properties of milk, a system was developed for studying the activity of lactenin, the antibacterial factor. Group A streptococci were found sensitive to lactenin, while other groups proved resistant or variable in reaction. The anti-streptococcic activity of the factor was found to be lost in media where the oxygen tension is low. Thiamine in certain concentrations was found to inhibit the activity, suggesting the possible interference of lactenin with thiamine metabolism.

PUBLIC HEALTH NURSING

Vol. 43, December, 1951

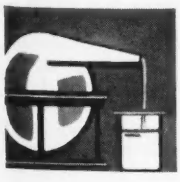
*Diet suggestions for the tuberculous on low income. H. R. Edwards and J. Turner.—p. 681.

ICE CREAM— a nourishing food and so good to eat

No loss of nutrients observed

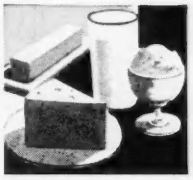
Just how *available* are the nutrients of ice cream . . . and how *readily* can they be used by the human body?

Chemical analyses have shown ice cream to be high in nutritive value[1] . . . now research shows that certain nutrients in this favorite dairy food are more readily available to the body than are those of many other foods.[2]



A controlled diet, demonstrated to have high digestibility, was fed to a group of healthy young women. After a preliminary observation period, certain foods were introduced into this basic diet in amounts in line with ordinary eating practices. Not all of these foods were well digested—failure to absorb all of the available nutrients resulted in some loss of calories, proteins, and fat to the body. *No such loss of nutrients was observed when ice cream was the added food.*

The suggestion has been made that the nutritive value of certain foods may be over-estimated if the foods are judged solely on the basis of composition, with no consideration of digestibility. This is not true of ice cream which, by either criterion, ranks high among foods of nutritional importance.



1. Dahlberg, A. C. and Loosli, J. K. *Nutritive value of commercial ice cream.* J. Am. Diet. Assn. *24*:20 (Jan.) 1948.
2. Everson, G., Pearson, E., and Matteson, R. *Biological availability of certain foods as sources of riboflavin.* J. Nutrition *46*:45 (Jan.) 1952.

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Vol. 44, April, 1952

* Teaching nutrition to children by means of a diet survey. R. P. Garde and M. Potgieter.—p. 232.

Diet Suggestions for the Tuberculous. The present concept of the diet in tuberculosis is not a "special diet" but an "optimum diet," which can be maintained by low income groups, provided they are taught a workable knowledge of nutrition. The role of the public health nurse and nutritionist in caring for the ambulatory tuberculous patient is, therefore, often one of education. Actually, the family approach is the key to a sound tuberculosis control program, and it has been found that families with such serious health problems as tuberculosis are most receptive to the teaching of nutrition. Recommended diets and meal patterns are suggested along with general economy tips.

Dietary Surveys Teach Children Nutrition. Boys and girls in grades five through eight participated in a one-week dietary survey in a Connecticut school. One sheet per day was used to record all foods eaten that day. The sheets were not taken home; thus the children were entirely responsible for their records. The survey showed the beginning of a greater awareness of dietary and health rules at an age when many have not yet formed definite food habits.

PUBLIC HEALTH REPORTS

Vol. 67, March, 1952

* Lead poisoning in young children. H. Williams, E. Kaplan, C. E. Couchman, and R. R. Sayers.—p. 230.
* National program for interstate milk shipments. L. A. Scheele and H. G. Hanson.—p. 260.

Lead Poisoning in Children. Poisoning in children caused by ingesting lead from surfaces coated with lead-containing paint is apparently widespread. The disease has a high rate of incidence in the city of Baltimore, where it occurs in children of teething age living in old, run-down rental properties where lead paint has been used for years. Public health education, laboratory services offered by city health departments to all hospitals, and enforcement of measures regulating the use of lead-containing paints have all helped to reduce incidence of lead poisoning.

Interstate Milk Shipments. The increased consumption of milk and milk products has long been advocated by the U. S. Public Health Service because of the nutritional importance of the food to all age groups. To achieve this goal and keep the supply standardized as to quality and sanitation. the Public Health Service recommends a cooperative program for certifying interstate shipments of milk. Until comparatively recently the amount of milk shipped in interstate commerce was small. Today, however, increased interstate commerce in milk indicates that the sanitation problem is of national scope.

A program has been drawn up at two recent conferences and is summarized in this article, with the notation that it has been adopted by thirty-two states and two territories but needs even greater voluntary participation. If its purpose is to be accomplished, the program must have the endorsement of all regulatory agencies, producers, processors, and distributors of milk.

SCIENCE

Vol. 115, March 28, 1952

* Bone implantation as a means of studying vitamin D action. B. B. Migicovsky and A. M. Nielson.—p. 354.

Bone Implantation. An attempt to test the *in vitro* observation that vitamin D exerts its influence on the environment from which bone receives its mineral was made by *in vivo* studies using the intact animal as the culture medium. One of each pair of tibiae from day-old chicks was placed under the skin of a 2-week-old rachitic or nonrachitic chick. The hosts were fed a rachitogenic diet without vitamin D or with 1 unit vitamin D per gram for four days, after which the implanted tibiae were removed. The calcium content was then compared with that of its nonimplanted mate. In the rachitic host, the bone lost calcium while in the nonrachitic host a slight gain was made. Using tibiae made radioactive with calcium[45], another experiment showed that the loss and gain of calcium in the nonrachitic host were less than in the rachitic and the ratio of loss to gain was less. Rats and rabbits were used in similar experiments, showing the technique to be apparently advantageous in studying the calcification mechanism.

SOUTHERN MEDICAL JOURNAL

Vol. 45, March, 1952

* Treatment of obese children. W. A. Reilly.—p. 217.

Treatment of Obese Children. The treatment of obesity in childhood consists chiefly of diet and less of exercise and drugs. A group of practical reducing diets for proper growth and development are described. It is essential that the physician gain the cooperation of the child and relay to him confidence in the success of the therapy. Dietary policing and frequent check-ups are necessary for success.

AMERICAN RESTAURANT MAGAZINE

Vol. 36, April, 1952

4 G's in success.—p. 42.
* Proper care of frying fats keeps food costs down. J. A. Cline.—p. 58.
What you should know about salads. L. D. Freeman.—p. 78.

Proper Care of Fats. Deep fat frying operations can be established and maintained on an economical basis by following the rules outlined here. Fats are unstable and deteriorate easily, and some of the causes of deterioration are: absorption of odors, oxidation, high temperatures, moisture in frying, and sediment from breaded or floured materials. A six-point summary on practical care of frying fat concludes the article.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 12, April, 1952

* Effective portion control keeps food prices within student's budget. R. C. Thomas.—p. 49.
Causes and cures of employe problems. A. M. Macfarlane.—p. 50.

Portion Control. Years ago, when most college dining halls aimed for nutrition and appeal alone, without price headaches, the University of Cincinnati purchased "ounce" scales and began studying successful business operation. Small details affecting volume were and are considered, such as fluctuating attendance, examination and vacation periods, and good weather which brings competition from outside restaurants. Student and older helpers may fail to realize the importance of portion control and must be trained. Prefabricated meats also make it easier to maintain portion control, and a soup base makes soups uniform in flavor and cost as well as helping to avoid leftovers. All incoming deliveries are checked and an accurate inventory is maintained. Experience has taught that a change in price rather than in portion size is more acceptable and less noticeable to students. Continuous surveillance and a realization by everyone in the organization of the importance of cost enables the university dining hall to maintain its budget.

FOOD ENGINEERING

Vol. 24, March, 1952

* New advance in canned fresh milk. C. R. Havighorst.—p. 39.
* They make better grape juice. J. V. Ziemba.—p. 54.
* Commercial promise seen for 11 new guava products. C. E. Wright.—p. 141.

Advances in Canned Fresh Milk. Handling and processing refinements introduced by a California concern, show another stride in the aseptic canning of fresh whole milk. The minimized raw material handling, processing economies, and reduced distribution costs cause the company to predict that soon their prices will be nearly as low as those of bottled milk. The system's major economy lies in the elimination of special handling equipment in transporting milk from farm to plant. Conventional refrigerated delivery also removes body-heat, eliminating a "cowey" taste and increasing opportunities for uniformity of flavor. This milk may be stored for as long as one year without refrigeration, with no impairment in quality.

Better Grape Juice. High-vacuum, low-temperature canning and freezing results in top quality frozen concentrated grape juice in a New York State plant. Four additional measures taken to preserve a near-natural condition of Concord grape juice are: (a) careful washing of the grapes prior to crushing and stemming; (b) universal use of stainless steel equipment; (c) three-step

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Folks who know Chicago, know the Red Star Inn on the near north side, as one of its better eating places. This famous gustatory landmark has been serving Sexton foods for half a century, being joined in that discriminating taste by thousands of public eating places, old and new, large or small, the country over. A pioneer in the distribution of foods to those who serve the public, Sexton has made a tradition of its selection of fancy canned sea foods. From the seven seas to the Red Star Inn or any eating place anywhere, we can and do deliver the finest of these marine delicacies.

Sexton Quality Foods

JOHN SEXTON & CO., CHICAGO, 1952

screening to separate seeds and skins from the juice before pasteurization; and (d) chilling the juice to settle out the tartrates. Details of the process are described and illustrated. One highlight is the use of ultra-violet lamps suspended over the casks for sterilizing during storage.

New Guava Products. Eleven new commercial processing possibilities for the guava fruit have been developed by the University of Miami's Food Technology Research Laboratories. Jelly has heretofore been the only product with which this ascorbic-acid-rich fruit has been identified. However, the Miami exploratory projects indicate the suitability of guava for making: frozen concentrate juice; frozen purée-form baby food in glass containers; the same purée heat-processed and canned; a frozen fresh-guava product both in sliced and purée form; dehydrated guavas packaged as a dried fruit; vitamin powder made from ground dehydrating guavas; sun-dried guavas; canned guavas; pastes; candies; and punch or wine. Commercial action has already been taken on the concentrate juice; a Florida company recently manufactured 250,000 cans of the product and is distributing them for a consumer-acceptance trial. Consumer acceptance of many tropical fruits is generally rather low, causing a risk in shipping the fresh products very far. However, success of the new developments could cause a high and stable market, making transportation of guavas worth while.

FOOD PROCESSING

Vol. 18, March, 1952

Inter-industry conference considers chemicals in foods controversy.—p. 6.

Public confidence is at stake in chemicals in foods controversy.—p. 7.

* How to label dietetic foods.—p. 10.
* Modernization of mixing—homogenization of dry ingredients, fats, and water reduce manual labor 85%.—p. 14.
* Treatment makes any variety of potato suitable for chips.—p. 21.
* Cottonseed by-product improves prepared mixes, confections, bakery products.—p. 24.
* Spring action of dispenser rack keeps bread handling trays at convenient working level.—p. 32.

Labeling Dietetic Foods. Until recently the labeling of dietetic canned foods has been a matter of each processor's decision. For some packers, identity and net weight of can was all that was shown. Now labeling has been standardized by the Food and Drug Administration.

Modern Mixing Saves Labor. Two years ago a New England chain-store bakery installed a new ingredient-handling system for its white dough line. Principal feature of the system is homogenization of dry ingredients, fats, and water. The process begins with a premix of: salt, 2 per cent; milk, 6 per cent; lard, 4 per cent; and sugar, 8 per cent. Flour is added later. The rest of the process is discussed and illustrated. One time-saving feature is a meter which, when a button is pressed by the operator of the dough-mixing machine, automatically measures the exact amount of homogenized mix to be added. This new system has produced bread of a more uniform quality, increased employee efficiency and morale, and improved cleanliness and sanitation.

Treatment of Potatoes for Frying. Recent research has found that any variety of potato may be used to make potato chips or French fries if the potatoes are soaked in a slightly acidulated water (0.044 per cent hydrochloric acid) at a temperature of 145°F. for 1 to 2 min. before cooking. No change in palatability is noticed after cooking.

Cottonseed By-Product for Cooking. It is claimed that a protein concentrate made from cottonseed when added to prepared mixes, confections, candies, gravy bases, and dry meat products increases nutritive values and enriches flavor.

Tray Dispenser Rack. A Detroit baking company used mobile automatic spring-powered racks to hold bread trays at a convenient level for workers to remove bread from conveyor belts. The trays were then loaded onto trucks. The dispenser eliminated stooping and stretching and thus increased the efficiency of the loading system.

FORECAST FOR HOME ECONOMISTS

Vol. 68, April, 1952

* Common sense weight reduction. R. M. Leverton.—p. 22.
* The bulletin board. A. Burris.—p. 37.

Intelligent Weight Reduction. Homemaking teachers can be of real help to the high school or college girl who wants to lose weight. It is important both to discover the true reason for the student's desire to reduce and to help her safeguard health while slimming. "Glamour" diets are warned against, and the necessity of a physician's guidance is particularly emphasized. Results of a fifty-four-day experiment with twelve young women on the author's modified reducing diet are described, and menus are given. Another feature of the article is a list of class activities, such as group therapy, dietary records, class discussion, and working the students' diets into meal-planning and nutrition classwork. The author also warns that cooperation by the parents of the would-be reducers is vital.

Bulletin Boards. Bulletin boards are this author's favorite teaching aid. Students are appointed to arrange the material and also encouraged to contribute objects which can be used for display. A sample bulletin board used in a child-care class is illustrated, showing objects that children have swallowed.

HOSPITAL MANAGEMENT

Vol. 73, March, 1952

* How St. Luke's of Denver made a 180-patient kitchen serve a 450-patient load. R. R. Prangley and J. K. Faunce.—p. 116.

Centralized Food Service Aids Expansion. The solution to the difficult expansion problem at St. Luke's Hospital, Denver, was centralized food service from a main kitchen in the basement. The temperature problem usually associated with centralized food service was solved in three ways. First, entrée courses are individually vacuum-sealed in insulated stainless steel containers. Second, tray carts described as "floor pantries on wheels" convey twenty trays at a time plus insulated bulk dispensers for liquids and other perishables. Third, controls on an infra-red dish heater, adjusted to keep entrées hot for an hour, eliminate cold, unappetizing trays for acutely ill patients whose mealtime is delayed by urgent treatment. Of particular interest is the fact that the cooking area remained constant in the 35 per cent expansion. It was formerly necessary to cook all foods in bulk for simultaneous distribution to five serving pantries. Now foods are freshly cooked in small quantities. Student nurses, under a dietitian's direction, conduct all dietary operations.

HOSPITALS

Vol. 26, April, 1952

* Standardization and reduction of the modified hospital diet. Sister Margaret Gertrude.—p. 155.

Modified Hospital Diet. Simplifying the special or modified diet is the current trend in achieving greater uniformity and standardization. The author urges the need for revising former practices in diet therapy to keep up with new findings in nutrition. She points out that consistent and easy-to-follow directions for modified diets will, in addition to improving the dietary, also cut labor time and cost for food handlers, the physician, and the dietitian. Dietetic terminology is discussed with regard to the need for specificity and standardization, and new manuals should reflect this. The new method of calculating diabetic diets worked out by A. D. A., the American Diabetes Association, and the Diabetes Section, U. S. Public Health Service, is cited as an example of simplification without sacrifice of correctness.

INSTITUTIONS MAGAZINE

Vol. 30, April, 1952

* Need patience, skill to train old employees.—p. 1.
* Set up methods of egg care to preserve freshness, flavor. W. H. Haskell.—p. 3.
* System steps up small-sized recipes to quantity proportions. A. B. Atkinson.—p. 4.
* Here's how to use frozen eggs.—p. 16.

Re-Training Employees. Refresher training, or job improvement, is a difficult phase of a training program. "Old-timers" may be uninterested in, or even resentful of, re-training. However, constantly changing conditions and new material that must be learned make it a necessity. Motivation is the proper approach for this type of program, and individual and group training methods based on this principle are described. Programs used in the Arkansas state vocational education program, at Oklahoma A. & M. College, and in the Milwaukee vocational and adult schools are outlined.

Egg Care. Scientific facts about eggs accompany practical suggestions for their care in this article. Many who

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BECAUSE THEY'RE
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purchase eggs, the author warns, do not realize the need for protecting them as carefully as they were protected on the farm, by the auctioneer, and by the wholesaler or jobber. Sanitation rules and protection against spoilage are discussed.

Making Big Recipes from Little Ones. Exactness and specificity in the original recipe are the important factors in adapting a family-size recipe to institutional use. The process is outlined with actual recipes. Amplification of small recipes is recommended for restaurateurs who wish to add variety to their menus. Time, interest, attention to detail, and accuracy are the keynotes to success.

Using Frozen Eggs. Proper freezing, storage, and use of frozen eggs are explained. A Chicago restaurant-bakery chain which makes frequent use of frozen eggs reveals a few tricks and uses for them in this article.

THE MODERN HOSPITAL

Vol. 78, April, 1952

* How Mr. Rogers gets his dinner. I. M. Stocking. —p. 112.

Food Service in VA Hospital. The dinner-serving operation at Denver's VA Hospital is described in this article. The short form of dietary calculation of Leichsenring and Wilson is used here in planning menus (menus for VA hospitals are written "on location," not in Washington). Care is taken to avoid repetition of foods or a monotonous "chicken-every-Sunday" pattern. A weekly menu conference is held, sometimes including the tryout of a new recipe. Meat and vegetable preparation is described. Other features of the hospital's food service are: a detailed visible-card-record cost accounting system in the dietary office; delegation of supervisory duties to nonprofessional personnel; classes for patients on the same type of diet; and a continuous training program for old as well as new dietary employees.

PRACTICAL HOME ECONOMICS

Vol. 30, April, 1952

* Planning meals and testing recipes for school lunch. M. T. Kavanaugh.—p. 175.

School Lunch Methods. School lunch planning and testing should be based on the same principles every successful businessman uses: "Who are my clients and what do they want?" To guess and imagine what school children want is not a success-making procedure. In Chicago schools an annual food acceptability survey is made to measure changes in food preferences. Then menus are planned, using these preferences as a skeleton to which are added less familiar and so-called less acceptable foods needed for good nutrition. Menus are planned a month in advance by a committee under the direction of the Test Kitchen staff and rechecked for nutritional adequacy and cost before being mimeographed. Standardized recipes are all-important in school lunch planning, and four points must be considered when standardizing or "cook-proofing" them: acceptability, nutritional adequacy, practicality, and cost. After recipes have been standardized, cooks must be trained so that they will use them without variation.

RESTAURANT MANAGEMENT

Vol. 70, April, 1952

* A fool-proof control system. R. Davenport.—p. 41.
* Pin-pointing your profits. Harris, Kerr, Forster, and Company.—p. 48.

Fool-Proof Control System. Modern tabulating equipment and a punched-card system have given a New York City restaurant chain precise control over every purchase it makes. This I. B. M. system, wholly new in the restaurant business, gives mechanical answers to such questions as: "How much food is on hand?" "Are all sales checks being turned in?" "Does the amount of the checks equal what's in the cash register?" "What is the check average per counter worker (by station, shift, hour, day, week, or month)?" "What is the stool turnover per hour?" and many others. Perpetual food cost figures are daily at the fingertips of the firm's executives. The system is described briefly and several illustrations of the machine and forms which are used are given.

Pin-Pointing Profits. Four restaurants in a department store in the Southwest are discussed, and the profit-and-loss statement of the basement counter operation is shown.

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Why? Because Steam-Chef steamers have helped countless food service operators to better and more economical cooking.

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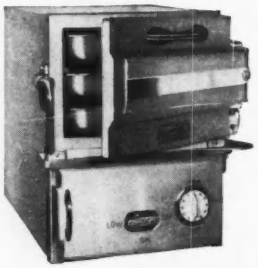
Helps any kitchen run faster and smoother. Steaming is the process that starts work in a jiffy, and speeds the cooking of foods. It enables you to cook in quantities as needed and serve food freshly cooked. You dispense with a lot of large and small pots and pans to be handled and scoured. It means less waste of food from shrinkage, from boiling away, from scorching, or from preparing more than is required.

Your extra dividend from your steamer is in using it for preheating, warming, freshening, blanching, and other uses.

Maybe you don't need a heavy-duty steamer for your size kitchen. If so, we can furnish Steamcraft 1 or 2 compartment junior steamers, the low-cost space saving unit that gives you all essential steaming advantages, on a smaller scale. Steamers are direct connected or for any kind of gas operation. Write for descriptive bulletins, also booklet by experts, "For Better Steaming."



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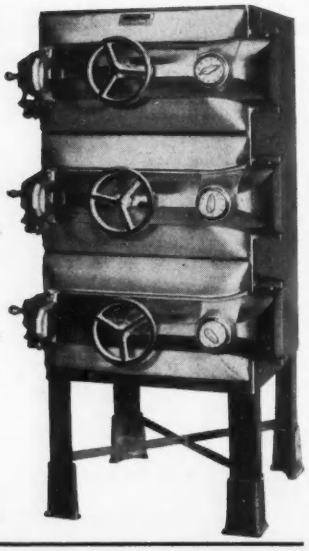

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GREAT NEW MONEY-SAVING IDEAS FOR YOU!

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Try *all three* of these genuine Jell-O treats today! You'll find that by pushing *these* low-cost desserts in place of some which cost you two and three times as much, your costs will begin to *dive*, while your profits *climb*.

STRAWBERRY MERINGUE PUDDING

Dissolve 1 lb. Strawberry Jell-O in 2½ qts. hot water; chill till slightly thickened. Then fold in 2 qts. halved fresh strawberries. Fill 42 parfait glasses ⅔ full, chill till firm. Top with strawberry meringue, made by whipping 2 egg whites with 1 cup crushed berries, 2 tablespoons lemon juice, and ¾ cup sugar. Costs you as little as . . .

3¢ PER SERVING!

BREAD PUDDING SUPREME

Combine 1 cup Jell-O Vanilla Pudding powder, 2¼ cups sugar, 2¼ tsps. salt, 4½ qts. milk, 9 eggs, and 1½ tbsps. vanilla. Blend well, stir in ¼ cup melted butter. Cut 16 slices day-old bread into 1-inch squares; place in lightly greased baking pans. Cover with milk mixture; let stand to soften bread. Sprinkle with 1 tsp. nutmeg. Bake in pans of hot water in moderate oven (350°F.) 35 to 45 minutes, or until firm. Serve with Creamy Vanilla Sauce (a GF card recipe). Serves 50, saves you money on eggs, and costs you only about . . .

4½¢ PER SERVING!

LEMON MARMALADE PIE

To achieve a tasty new effect, prepare Jell-O Lemon Pie Filling as directed on package, turn into 10 baked pie shells, and chill. Whip 1¼ qts. heavy cream and fold in 2½ cups orange marmalade, softened slightly by stirring. Spread on pies, chill again, and watch the response from your customers. Costs you only about . . .

5¢ or 6¢ PER SERVING!

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News Notes

Campaign to Promote Training of Food Handlers. In the interest of reducing food-borne disease outbreaks, a joint campaign to promote a nation-wide training of food handlers has been launched by the U. S. Public Health Service, Navy, and Air Force. The first step in the campaign was the development of a new *Instructor's Guide—Sanitary Food Service* by the Public Health Service in cooperation with the Navy and the U. S. Office of Education. This manual presents material to help the instructor as well as the factual subject material.

To introduce the material and encourage its use, not only within the Navy and Air Force, which have officially adopted it, but also by state and local health agencies and private organizations concerned with large quantity food production, a series of twelve regional meetings was conducted in April and May, the first being presented in Chicago on April 23, 24, and 25.

These meetings were led by a traveling team from the governmental agencies: Dr. James Lieberman, U. S. Public Health Service; Major Ralph D. Walters, U. S. Air Force; Lt. Robert Thurston, Bureau of Supplies and Accounts, U. S. Navy; and Lt. j.g. Robert E. Mytinger, Bureau of Medicine and Surgery, U. S. Navy.

The group discussion plan was used in presenting the material in order to teach participants this method of conducting meetings. Each small group considered one section of the subject matter in the manual, making recommendations for its use. A review of the manual will appear in a later issue of the JOURNAL, as well as a more comprehensive report of these meetings and the program to standardize training for food service employees throughout the nation.

FAO News. Fellowships for agricultural studies in technically advanced countries under Food and Agriculture Organization agreements now number 375, with five hundred the target for the end of 1952. As of March, fifty-five fellows were already studying in foreign fields and schools, and forty more were ready to start their studies within the next few months. Of the fellows now studying, ten are in home economics.

According to a graph published by FAO on the percentage of total requests for technical assistance, advisory service in nutrition, food management, and home economics has ranked sixth with 6.8 per cent of the requests already implemented by experts as of September 30, 1951.

WHO News. *Prevention and Treatment of Severe Malnutrition in Times of Disaster* has recently been published as World Health Organization Technical Report No. 45. This report, approved by the Joint FAO/WHO Expert Committee on Nutrition, was presented to the Fourth World Health Assembly last year. The booklet discusses: (a) food management during times of disaster; (b) physiologic, clinical, and therapeutic aspects of the problem; and (c) organizational aspects of relief programs. Both starvation and undernutrition are considered, with the problems arising from each. A bibliography of sixty-four references concludes the report. The booklet may be ordered in the U. S. from International Documents Service, Columbia University Press, 2960 Broadway, New York 27. The price is 35 cents.

A.H.A. Personnel Change. Announcement has been made of the appointment of Isola Robinson as Dietetics Specialist for the American Hospital Association. Mrs. Robinson is a graduate of Oklahoma A. & M. College, Stillwater, and took her dietetic internship at the University of Michigan Hospitals. She has served as Administrative Dietitian at the University of Michigan Hospitals and Food Manager at New York Hospital, New York City. For eight years she was dietitian for G. Fox & Company, Hartford, Connecticut, during which time she was responsible for the installation of equipment for the entire food department. She has taught on the faculty of the University of Connecticut and served as consultant dietitian for E. A. White & Co., Hartford, Connecticut, and the Wilmington General Hospital, Wilmington, Delaware. At Wilmington, she was responsible for equipping, opening, and directing the new dietary department of the hospital.

Mrs. Robinson succeeds Margaret Gillam, who has resigned after six years as Dietetics Specialist for the A.H.A. to make her home in Princeton, Missouri.

Miss Gillam Appointed U.S.P.H.S. Consultant. Margaret Gillam, former Dietetics Specialist, American Hospital Association, has been appointed professional consultant in dietetics to the Division of Civilian Health Requirements, U. S. Public Health Service. She will be one of twenty-one such advisers from the professional public health field. In addition, fourteen liaison representatives from trade associations dealing with materials required in health and sanitation programs have been appointed. The U.S.P.H.S. has appointed these advisers and liaison representatives to help in estimating, presenting, and justifying construction materials requirements and to assist in the operation of services of its health and sanitation programs.

Food Service Awards. The Dietary Department of the University of Chicago Clinics was named one of five recipients of first awards "for highest attainment in food service" in the sixth nationwide Food Service Contest conducted by *Institutions Magazine* to determine and honor the outstanding kitchens and dining rooms in the nation. Entries were first analyzed by a panel of seven experts, of which Mary deGarmo Bryan was a member. The results of the panel's findings were made available to the Board of Judges which was composed of: Margaret A. Ohlson, A.D.A. President; Martin J. Harding, President, National Restaurant Association; Albert Pick, Jr., Treasurer, American Hotel Association; J. G. Norby Past President, American Hospital Association, and John O. Merrill, senior partner, Skidmore, Owings & Merrill, architects. Presentation was made to Ella M. Eck, Director of Dietetics of the Clinics, at the National Restaurant Association's convention last month in Chicago. Following an announcement of the award, an illustrated feature story about the Clinics' Dietary Department and Miss Eck was published in the Chicago *Tribune*.

Included in the Merit Awards were Beth-El Hospital, Brooklyn, where Ruth Saslaw is Executive Dietitian, and Skidmore College, Saratoga Springs, New York, where Eileen B. Boyce serves as Director of Food Service.

Two of the Honor Awards went to Oklahoma A. & M. College, Stillwater—Audris Rife, Head Dietitian; and Reynolds Metals Company, Richmond, Virginia—Kathryn E. Smith, Director of Food Service.

Dr. Stiebeling Wins U.S.D.A. Award. Dr. Hazel K. Stiebeling, Chief, Bureau of Human Nutrition and Home Economics, U.S.D.A., on May 15 was awarded the Department of Agriculture's highest citation—the Distinguished Service Award. Dr. Stiebeling received this honor "for her contribution to human betterment through nutrition work in the United States and abroad" at the annual ceremony at which the Department confers recognition on members of its staff.

Dr. Stiebeling joined the staff of the Bureau of Human Nutrition and Home Economics in 1930 as a food economist, and her early studies pointed up the nutritional problems of the drought-and-depression decade. In 1936 she attended her first international conference, and since then her activities have concerned nutrition on a global basis. She has been a member of many delegations to FAO and other international conferences. In 1943, she received the annual Borden Award for "significant contribution to knowledge of food habits of the population of the United States," and the following year she was named Chief of the Bureau which she now heads.

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CELLU COOL SIP—Flavoring for beverages. One bottle makes about 24 glasses. 4 flavors: Orange, Lime, Raspberry, and Cherry. Also flavors sauces, puddings, gelatin desserts.

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Model 1411 (illustrated) has glass protected dial, price $15.00

Model 1440 enamel dial, price $10.00

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Activities at Walter Reed. The officers of the Army Women's Medical Specialist Corps in the Washington, D. C. area observed the fifth anniversary of the Corps with a reception at the Walter Reed Army Medical Center Officers' Club. Approximately one hundred people, including Maj. Gen. George E. Armstrong, Army Surgeon General, and Maj. Gen. Paul A. Streit, Commanding General of Walter Reed Army Medical Center, attended, as well as representatives of the various women's corps in the military service. Col. Nell Wickliffe, Chief, WMSC, with Col. Emma E. Vogel, now retired and first chief of the Corps, received the guests.

A second function at Walter Reed was an open house on March 15 to acquaint the public with activities of the military service. Maj. Gen. Streit and Col. Wickliffe welcomed the guests, among whom were home economics students and dietetic interns from nearby colleges and hospitals. Conducted tours were made of the Food Service Division as well as the Physical Therapy and Occupational Therapy Departments. Dietetic interns at the hospital served as guides through the Food Service Division.

Research Report. *Physiological Changes in Plasma Proteins Characteristic of Human Reproduction* is a new 170-page monograph released by the Children's Fund of Michigan. The book was written by Dr. Icie G. Macy, Director of the Fund's Research Laboratory, and Dr. Harold C. Mack, Harper Hospital. It presents the results of the Research Laboratory's electrophoretic studies of blood plasma proteins. The monograph (a) provides detailed results from each determination and pertinent supplemental information which will permit effective use of the data by other investigators; (b) demonstrates variabilities in the interpretation of results owing to inconsistencies in sampling, analysis, and calculation; and (c) illustrates significance of individual variability among women owing to health and other considerations. The book contains four sections: "Plasma Proteins Before, During and Following Pregnancy"; "Methods for Studying Plasma Proteins"; "Blood Composition in Physiological States"; and "Blood Plasma Proteins During and Following Pregnancy."

Plentiful Foods. The U.S.D.A. lists the following foods expected to be plentiful during June:

Fruits and vegetables

Asparagus
Beans, pea
Beans, baby Lima
Carrots
Celery
Grapefruit products, processed
Lettuce
Orange juice, canned and frozen
Oranges

Protein foods

Chickens—broilers and fryers
Dairy products
Eggs
Fish, fresh and frozen
Turkeys

Other foods

Fats, cooking
Salad oils

SURE I RAN...HOW DID I KNOW THE BOSS WANTED TO *Congratulate* ME?

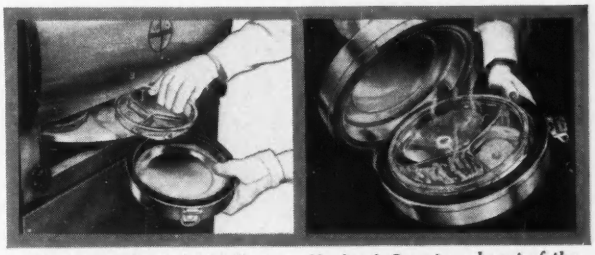
About the only time we dietitians hear the words "*Well done!*" is when a patient insists he wanted his meat that way—and didn't get it. So naturally, when the boss approached me with that certain look in his eye, I said to myself, "*gosh, what have I done now?*"—and made a bee line for home base.

"*Miss Albright,*" says he (after three laps around the third floor), "*I just wanted you to know that you showed a streak of true genius in recommending the* MEALPACK SYSTEM. *Our food has never been so good, our patients so happy, our food waste so small, and our savings so large.*"

• • •

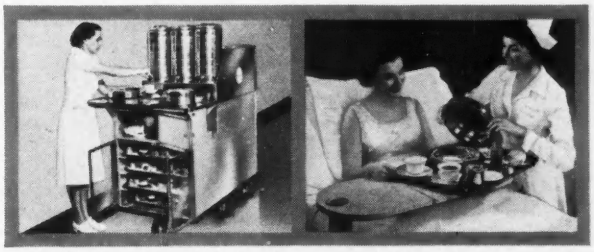
The **Mealpack System** guarantees that hot or cold foods will still be that way when they're served...and stay that way throughout the meal. It saves floor space and eliminates floor pantries. It will more than pay its own way in virtually any hospital, large or small, old or new!

Why not write *for the complete story of the* MEALPACK SYSTEM. *It has a lot to offer every dietitian.*



Mealpack Infra-Red Dish Heater *uniformly pre-heats and sterilizes each Pyrex dish before it is placed in container, ready for packing. Motor-driven turntable delivers heated dishes at rates adjustable from 200 to 480 per hour.*

Mealpack Container, *heart of the* MEALPACK SYSTEM. *Patented design and construction of this stainless steel unit provides a self-forming vacuum which holds original cooking heat, moisture, aroma, and flavor, hours after preparation.*



Mealpack Tray Cart *is a "portable floor pantry." Loaded with individual, vacuum-sealed meals, it's easily rolled to rooms and wards. Soups, beverages, ice cream, etc., are dispensed at serving point. Tray cart requires no heat.*

In continuing preference surveys *over 95% of the patients vote conclusively and enthusiastically for* MEALPACK. *If you would like to have such a survey conducted in your hospital at our expense, we'll be glad to work with you.*

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...a welcome addition to low-fat, low-sodium and low-cholesterol diet!

The big question of everyone on restricted diets is "What can I eat?" DIETETIC TUNA does much to answer the question. For it adapts itself equally to a hearty "meat course," a tempting salad, or a delicious "snack." It's a high-protein food, containing all the essential amino acids in well-proportioned quantities. It contains less than 1% fat. Its low-sodium and low-cholesterol content makes it extremely desirable for many uses in diet-therapy.

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Tri-State Meeting. The Annual Tri-State Assembly was held in Chicago, April 28 through 30. As is customary, the Indiana, Illinois, Michigan, and Wisconsin Dietetic Associations sponsored a program for dietitians. This year it was planned by the Wisconsin group and consisted of a review of "Nutrition News" by Dr. Helen T. Parsons, School of Home Economics, University of Wisconsin, Madison, and a discussion of "Management Returns from Cost Control" by Katherine Hart, Department of Institution Administration, Michigan State College, East Lansing.

Career Workshop. On April 3, 4, and 5, the Minnesota Dietetic and Home Economics Associations co-sponsored a Career Workshop in Minneapolis and St. Paul for college girls. On the first afternoon, the guests enjoyed informal tours of the Home Economics Department of the University of Minnesota. The following day representatives of the following fields within home economics spoke: dietetics, teaching, extension, restaurant management, business, and institutional management. In addition, field trips to hospitals, school lunch operations, business test kitchens, and restaurants were included in the program.

U.S.D.A. Publication. *Folic Acid Content of Foods* is the title of the new U.S.D.A. Agriculture Handbook No. 29. Prepared by Edward W. Toepfer, Elizabeth Gates Zook, and Martha Louise Orr of the Bureau of Human Nutrition and Home Economics, and L. R. Richardson, Texas Agricultural Experiment Station, the handbook has the subtitle "Microbiological assay by standardized methods and compilation of data from the literature." Figures on some two hundred foods are given in tabular form. Another table presents a compilation of figures on folic acid composition of foods taken from the literature. Concluding the handbook is an extensive bibliography. The booklet may be obtained from the Government Printing Office, Washington 25, D. C., for 45 cents a copy.

Booklet for Children's Homes. The Kansas State Board of Health has issued a new mimeographed publication titled "Food Budgets for Children in Foster Care. Part I. In Boarding Homes and in Day Care Homes." Prepared by Helen Ger Olson, state nutritionist, the publication was done in an attempt to derive a figure for monthly food costs that would probably provide an adequate diet in homes receiving little dietary advice or supervision. It presents a "low-cost food budget" figured at December 1951 prices, in addition to a table on weekly quantities plus price of a low-cost dietary for family members of various age and activity. A weekly market order is worked out, as well as other related material.

Film on Rice Enrichment. "Rice and Health" is the title of a new 16-mm. color motion picture now available from the Williams-Waterman Fund for the Combat of Dietary Diseases. It has a running time of 14 min.

Consisting largely of scenes taken in the rice-eating countries of Asia, the new film shows how intake of vitamin- and mineral-deficient white rice leads to deficiency disease. One sequence shows an experiment where beriberi is induced in chickens, and examples of the effect of the disease on human beings among white-rice-eating people are also shown.

Parboiling and fortification of rice are presented as solutions to the problem. The benevolent influences of proper cooking method, undermilling of rice, and the use of supplementary foods are covered. There are also highlights of the Bataan experiment where rice fortification resulted in virtual eradication of beriberi among 90,000 Filipinos.

Copies of this film are available at $50 per print. Provision has not been made for loan or rental, although copies may be had for inspection. Inquiries should be addressed to Williams-Waterman Fund, Research Corporation, 405 Lexington Avenue, New York 17.

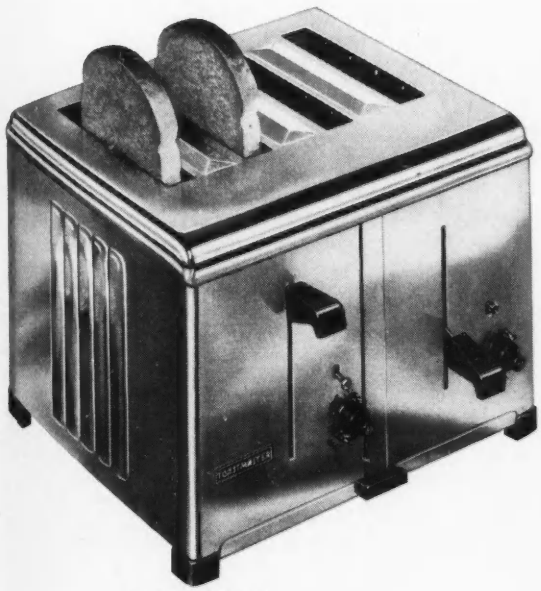
Lay Article on Low-Sodium Diet. The June issue of *Good Housekeeping* carries a feature article on the low-sodium diet. In it are presented sample menus for three days for eighteen different diets which have been planned at three sodium levels, two protein levels, and three calorie levels. Twelve recipes for low-sodium dishes are also given. Additional menus to cover a total of a week are offered in booklet form.

Sandwiches and Picnics. July has been designated as Picnic Month for 1952, and to make picnics more enjoyable, the American Institute of Baking has made the following suggestions for preparing sandwiches.

Proper care of sandwiches is very important in hot weather; some fillings are more perishable than others and require more precautions in handling. Nonacid, moist, and mixed fillings of the salad type are not recommended, unless they can be kept at 50°F. or below. Sandwiches made with jelly, peanut butter, nonperishable cheese, pickled tongue, or thuringer-type sausage keep well. If sandwiches cannot be kept refrigerated, they should be made and packed at the last possible moment. It is recommended that all perishable foods to be used be refrigerated until the sandwiches are to be made, and leftover roasted meat or poultry sandwiches should be eaten soon after the fillings are removed from the refrigerator.

To help institutions and restaurants which are concerned with large-scale production of sandwiches, the American Institute of Baking has just released a new booklet, *Modern Sandwich Methods*. Data incorporated in it include: precautions for food handling; recommendations for bread storage; a listing of sandwich supplies; a page of drawings showing sandwich arrangement; and guides in simplifying job methods, including proper design of the sandwich-making counter, height of work surface, area of the worker's reach, and proper knives and scoops. A table giving capacity of scoops is also included, as well as step-by-step instructions for the following methods of sandwich-making:

serve hot, fresh toast from the TOASTMASTER *toaster in your* FLOOR DIET KITCHENS!



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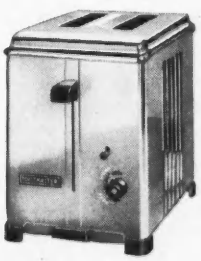

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Your food service equipment dealer will be glad to show you all the advantages of the flexible, "put-it-where-you-need-it" "Toastmaster" Toaster. Call him now.

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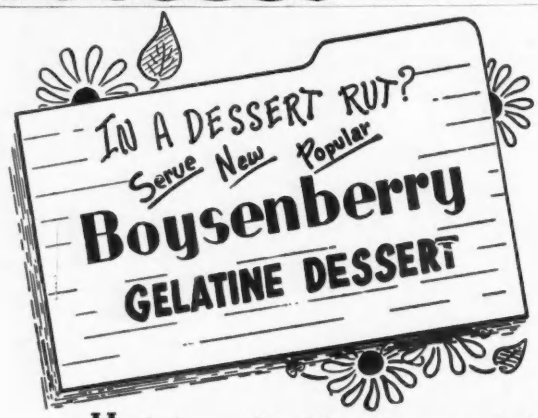

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News of State Associations

California Dietetic Association. The *Bay Section* of the California Dietetic Association held its April meeting at Treasure Island Naval Base, San Francisco. A tour of a typical Navy shore-base galley was conducted by a chief steward.

Colorado Dietetic Association. *Denver Dietetic Association* members met in February for a demonstration on flower arrangements, and in March to hear Col. Carl Temple, Fitzsimons Army Hospital, discuss "Developments in the Treatment of Tuberculosis." Officers of the Denver Dietetic Association are: President, Maj. Elizabeth Carloss, Fitzsimons Army Hospital, and Secretary-Treasurer, Dorothy Scott, Children's Hospital.

Georgia Dietetic Association. The spring meeting of the Georgia Dietetic Association was held in Savannah, April 18 and 19, in conjunction with the Georgia Home Economics Association and the Georgia Nutrition Council. The program included:

"Home Economics in Civil Defense"—Brig. Gen. Frank A. Kopf, Georgia Deputy of Civil Defense
"What Every Woman Should Know"—Lawrence B. Sizer, Marshall Field & Company, Chicago
"The Dietitian Comes of Age"—Dr. Margaret A. Ohlson, A.D.A. President

Weight reduction was the subject of a program sponsored by the Georgia Nutrition Council during the meeting. Dr. Mary Speirs, Georgia Agricultural Experiment Station, discussed "Fad Reducing Diets," and Dr. Charles S. Mache, Jr., Charleston, South Carolina Heart Demonstration Unit, spoke on "The Medical Aspects of Reducing."

Indiana Dietetic Association. Indianapolis was headquarters for the annual spring convention of the Indiana Dietetic Association on April 23 and 24. Beulah Hunzicker, President-Elect, A.D.A., as the official representative, presented a paper on food cost control and also discussed Association affairs.

Dr. B. T. Maxam, The Methodist Hospital, Indianapolis, spoke on recent trends in medical management of the peptic ulcer patient. Kathryn Sheedy, Lilly Clinic, Indianapolis General Hospital, explained the new Heart Foundation trailer kitchen. The film "Fat or Fair" was shown by the Indianapolis Dairy Council.

A panel on "The Dietitian and Civil Defense" was presented by John Kahlert, Regional Office of Civil Defense, Chicago; Mrs. Sherrod Stuckey, Indianapolis Office of Civil Defense; and Margaret Dunham, Indiana State Board of Health. Elizabeth Huey, L. S. Ayres &

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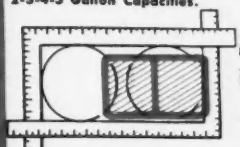

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Company, Indianapolis, showed colored slides on "styling" food. John Clarke, Stewart-Warner Corporation, Indianapolis, chose personnel techniques as his topic, and James Toy, Union Federal Savings and Loan Association, Indianapolis, discussed management's part in an efficiently run institution.

Guest speakers at the luncheons were Dr. Beulah Gillaspie, Dean, School of Home Economics, Purdue University, West Lafayette, whose topic was "Developing a Professional Attitude," and Lois Keck, dietetic intern, Indiana University Medical Center, Indianapolis, who spoke on "Highlights of a Dietetic Internship."

Newly elected officers for the Indiana Association are: President, Rose Bagnoli, VA Hospital, Indianapolis; President-Elect, Hazel Wessel, Methodist Hospital, Indianapolis; and Treasurer, Helen Skinner, St. Joseph's College, Collegeville.

Iowa Dietetic Association. The spring meeting of the Iowa Dietetic Association was held in Des Moines on April 23, in conjunction with the Iowa Hospital Association. Dr. Margaret A. Ohlson, A.D.A. President, discussed Association affairs. She also spoke on "Research Studies on Weight Reduction by Diet." Dr. Daniel A. Glomset, Des Moines, talked on "Philosophy of Weight Reduction," and John Ronald Frazer, Iowa State College, chose as his topic "Methods of Analyses for Dietitians." The National Dairy Council film, "Weight Reduction through Diet," was also shown.

Officers for 1952-53 were elected as follows: President, Mildred Torrance, Mercy Hospital, Des Moines; President-Elect, Darleen Pullins, St. Joseph Hospital, Ottumwa; Secretary, Irma Piegors, State University of Iowa Hospitals, Iowa City; and Treasurer, Shirley Needham Wilkins, Children's Hospital, Iowa City.

The Iowa Dietetic Association will sponsor a booth at the state fair, which will be held in Des Moines in August.

Kentucky Dietetic Association. The Kentucky Dietetic Association held its meeting in conjunction with the Kentucky Association of Medical Record Librarians and the Kentucky Hospital Association in Louisville, March 25 through 27. The dietetic portion of the program included:

"Food Value of Plants as Affected by Soil"—Dr. Walter Thomas, University of Kentucky, Lexington

"New Trends in Marketing to Preserve Food Value"—Dr. C. D. Phillips, University of Kentucky, Lexington

"The Nursing Team"—Margaret K. Schafer, Nurse Consultant, U. S. Public Health Service, Washington, D. C.

"Improvement to Insure Quality and Economy in Dietary Services"—Sister Mary Esther, Dietetic Consultant, Nazareth, Kentucky

"How the Accrediting Programs Will Affect Kentucky Hospitals"—Dr. Edwin Crosby, Director, The Johns Hopkins Hospital, Baltimore

"The Control of Hazards in the Hospital"—George H. Buck, Director, University of Maryland Hospital, Baltimore

"Role of the Dietary Department in Whole Set-Up of the Hospital"—Margaret Gillam, American Hospital Association

"Some Aspects of Sodium and Potassium Metabolism"—Corinne H. Robinson, Temple University School of Medicine, Philadelphia

Ruth M. Yakel, A.D.A Executive Secretary, attended the meetings as representative of the national Association.

Maine Dietetic Association. The Maine Dietetic Association held its annual spring meeting in Augusta, April 26. Cora Kusner, Colorado State Hospital, Pueblo, was official A.D.A. representative.

As part of its vocational guidance program this year, the Maine Association conducted an essay contest for junior and senior high school students. Entrants wrote on the topic of "Why I Would Like to Be a Dietitian." A prize of $25 was awarded at the spring meeting.

Aid to foreign libraries is another of Maine's projects. Last year considerable information on nutrition and dietetics was sent to Dr. John Vroom of Pakistan, and this year a *Maine Diet Manual* has been sent to him. The committee also has sent a year's subscription to the JOURNAL and a copy of McLester's *Nutrition and*

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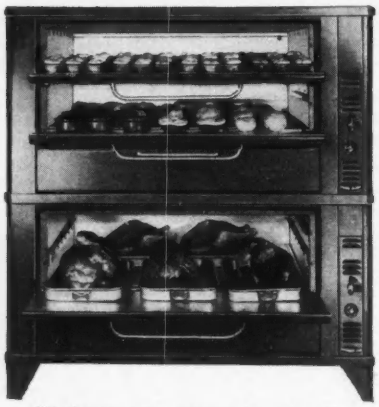

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Diet in Health and Disease, 3rd edition, to the Free University in Berlin. The committee is now trying to assemble last year's copies of the JOURNAL and *Science* to send to Berlin. In addition, $10 for books on health and welfare have been sent to CARE with the request that the Friends' Service Association be consulted about the place where they are most needed.

The *Maine Diet Manual*, a new manual of special diets adapted to the food habits and supplies of the state, has recently been compiled by members of the Maine Association. The Maine Department of Health and Welfare has distributed this manual to all general hospitals of the state and to physicians and dentists. Copies of individual diets in the *Manual* will be supplied to physicians on request to the Department.

Michigan Dietetic Association. The Michigan Dietitians' Conference, sponsored by the Michigan Dietetic Association, was held April 18 and 19 at Michigan State College, East Lansing. The program included:

"Comments on Federal Meat Grading and Inspection Regulations"—Lyman J. Bratzler, Animal Husbandry Department, Michigan State College

"Home Grown Sanitation"—Robert A. Telder, Michigan State College

"Army Hospital Food Service and the Dietitian"—Mary I. Barber, Defense Department Advisory Committee on Women in the Services, and Capt. Evelyn M. Girard, WMSC

"Departmental Functions in the Complex Society of the Modern Hospital"—William K. Klein, Hurley Hospital, Flint

"Personnel Aspects of the Dietitians' Work with Employees"—Carl C. Frost, Psychology Department, Michigan State College

"Tested Tips for Supervising Women"—C. F. Moran, General Motors Corporation

"Recent Developments in Nutrition and Dental Research"—Dr. Dena C. Cederquist, Michigan State College

"Fluorination of City Water Supplies"—Dr. Fred Wertheimer, Michigan Public Health Department

"Goiter Prevention in Michigan"—Alice H. Smith, Michigan Department of Health

"Food Programs on Television"—David M. Davis, Television Department, Michigan State College

LeVelle Wood, A.D.A. Treasurer, was Association's representative. She discussed "Interesting Sidelights from Headquarters." The two-day program closed with a tour of the Kellogg Center.

Missouri Dietetic Association. St. Louis was host to the Missouri Dietetic Association at its annual meeting on April 18. The program included:

"Menu Variety within Your Budget"—a panel consisting of Gertrude Kable, Kate Daly, Erneste Horn, and Maurice File

"Effective Steps to Relieve Your Employee Problems"—Alberta Macfarlane, Food and Equipment Consultant

"Some Basic Concepts Regarding Extracellular Fluid and Its Sodium Content"—Dr. C. Barber Mueller, Department of Surgery, Washington University, St. Louis

"Children at the Crossroads"—Mrs. Jules Kopp, Missouri Association of Social Welfare

As the representative from the national Association, E. Evelyn Smith presented a talk on recruitment which will appear in a later issue of the JOURNAL.

Nebraska Dietetic Association. The fifth annual joint convention of the Nebraska Dietetic Association and the Nebraska Home Economics Association was held in Omaha, March 14 and 15. Mrs. Fred Ruth, Lincoln, presented a panel titled "They Never Suspected." Participants were the Good family, a couple with two young sons who had been included in the study "Come on, America, Let's Eat" in the November *McCall's* Magazine. Each member of the family told of the benefits he has received from the study in the form of improved food and health. Other speakers were: Frances Urban, Field Secretary, American Home Economics Association; Selma Andrews, home economist, Chicago; and Dr. William Hail, Psychologist, University of Nebraska, Lincoln.

Newly elected officers for 1952-53 of the Nebraska Dietetic Association are: President, Dr. Doretta Schlaphoff, University of Nebraska, Lincoln; President-

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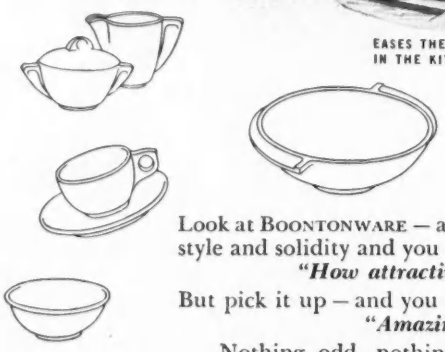

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MEAT... and our changing national caloric requirement

Because of labor-saving devices in present-day occupations, automotive transportation, and fewer hours in the working day, and because population concentrations are moving from rural to urban areas, the resulting changes in living habits have sharply decreased the caloric needs of millions of Americans.[1] Whereas many persons formerly expended 3,500 calories or more daily, today their expenditure may be only 2,500 calories per day. Despite this reduction in caloric requirements, the needs for most essential nutrients—proteins, vitamins, and minerals—remain largely unchanged.

Hence, today more than ever before, foods should be chosen for their high content of essential nutrients in relation to the calories they provide. Foods of high nutritive quality, such as meat, therefore, assume particular importance in the changing American diet.

That meat supplies an abundance of essential nutrients in relation to calories is evident from the table given below. Note that the percentage contribution of the recommended daily dietary allowances made by each nutrient is greater or much greater than the percentage contribution made by the calories.

Calories and Nutrients Provided by 6 oz. of Average Cooked Meat and Their Percentages of Recommended Daily Dietary Allowances

	Amounts per 6 oz. of Average Cooked Meat*	Percentages of Recommended Daily Dietary Allowances N.R.C.†
Calories	454	19%
Protein (biologically complete)	44 Gm.	63%
Iron	5.6 mg.	47%
Phosphorus	4.4 mg.	28%
Niacin	9.5 mg.	79%
Riboflavin	0.44 mg.	24%
Thiamine	0.50 mg.	42%

*Average number of calories and average amounts of the chief nutrients furnished by six-ounce servings of cooked meat (averages of amounts furnished by six ounces each of cooked beef, lamb, pork, and veal).[2]

†National Research Council's recommended daily allowances for a sedentary man (154 lb.).

In addition to the nutrients listed above, meat contributes noteworthy amounts of the vitamins biotin, choline, folic acid, inositol, pantothenic acid, pyridoxine, and the newly discovered vitamin B_{12}.

1. King, C. G.: Trends in the Science of Food and Its Relation to Life and Health, Nutrition Rev. *10*:1 (Jan.) 1952.
2. Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw, Processed, Prepared, in Agriculture Handbook No. 8, United States Department of Agriculture, Bureau of Human Nutrition and Home Economics, 1950.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
Main Office, Chicago...Members Throughout the United States

Elect and Secretary, Marion Keller, The Companion Companies, Omaha; Vice-President, Virginia Young Tompkins, VA Hospital, Lincoln; and Treasurer, Betty Jean Yapp, Mary Lanning Hospital, Hastings.

Utah Dietetic Association. The annual spring meeting of the Utah Dietetic Association was held in Ogden on April 19. A demonstration on home freezing of foods was given by Dr. Ethelyn O. Greaves, Director, School of Home Economics, Utah State Agricultural College, Logan. The problem of allergy was the topic of discussion chosen by Dr. J. G. Olsen, Ogden physician. A report on a survey of rheumatic fever was made by Dr. Ethelwyn Wilcox, School of Home Economics, Utah State Agricultural College, Logan. A special feature of the program was a field trip to the Intermountain Indian School in Brigham City. Stella Young, in charge of food service at the school, conducted the tour and explained the responsibilities of her position. The banquet speaker, Kenneth Knapp, Administrator, Dee Memorial Hospital, Ogden, talked on "The Dietitian's Role in Civil Defense."

Association Activities

A.D.A. Representative. Corinne H. Robinson, A.D.A. Diet Therapy Section Chairman, attended the Delaware Dietetic Association meeting in Wilmington, May 19, as the national representative.

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Eating Is Fun. The A.D.A. publication—*Eating Is Fun—for Older People, Too*—has just been released. This booklet is designed for the use of the managers of homes for the aged and chronically ill. It is based on normal nutrition and is applicable for home use also.

The material, an outgrowth of the A.D.A. Diet Therapy Project #3, 1950-1951, was written by Vera Walker, last year's Chairman of the Project. Portions of the booklet are taken from *Food after Fifty*, prepared by Dorothea A. Sender and Ruth Frahm of the Nebraska Dietetic Association. Corinne H. Robinson, A.D.A. Diet Therapy Section Chairman; Sister Maude Behrman, present Chairman of the Project; and many others have given invaluable guidance in the development of this booklet.

Eating Is Fun, priced at 50 cents a copy, may be obtained from the A.D.A. Headquarters office.

New A.D.A. Exhibit. A new A.D.A. exhibit has been created for use at national conventions of allied associations. It illustrates the advantages of the sharing of the consultant dietitian by small hospitals. The initial showing took place at the Catholic Hospital Association meeting in Cleveland in May.

Food and Nutrition Board Meeting. Dr. Margaret A. Ohlson, a member of the Food and Nutrition Board, and Dorothea F. Turner, A.D.A. liaison representative, attended the Food and Nutrition Board meeting of the National Research Council held in Washington, D. C., on April 25 and 26.

By-Laws Committee. Meetings of the By-Laws Committee of the House of Delegates were held March 19 and May 6 at the Headquarters office. Plans were made toward the revision of the state officers' manual. Letters were written to those states whose final constitutions had not yet been received.

Civil Defense Meeting. Dr. Lillian S. Coover attended the meeting of the National Advisory Committee on Women's Participation in Civil Defense in Washington, D. C., on May 5, as the A.D.A. representative.

Other Representation. Ruth M. Yakel attended the 35th Annual Meeting of the *American Council on Education* in Chicago on May 2 and 3.

Dorothy J. Bates and Miss Yakel served as resource persons at a *Pan American Institute of Educational Relations* meeting of the Steering Committee at International House in Chicago on May 4.

Plans for Annual Meeting. Winifred H. Erickson, Ruth Nickel, and Eleanor C. Wilson, convention Co-Chairmen, met with representatives of the Headquarters staff at the Hotel Radisson in Minneapolis on April 15 to make plans for the 35th Annual A.D.A. Meeting in October. A special meeting of chairmen and co-chairmen of the local arrangements committees was also held.

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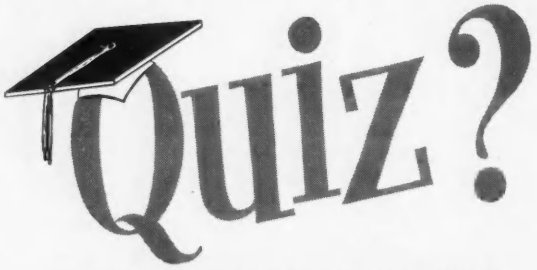

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